

A Study of the Application of Information and Communications Technology in Customer Relationship Management in Selected Airlines in Nigeria

G.O. Binuyo
African Institute for Science
Policy and Innovation,
Obafemi Awolowo University,
Ile-Ife, Nigeria

J.O. Olasupo
African Institute for Science
Policy and Innovation,
Obafemi Awolowo University,
Ile-Ife, Nigeria

E.M. Ogunjemilua*
African Institute for Science
Policy and Innovation,
Obafemi Awolowo University,
Ile-Ife, Nigeria

ABSTRACT

This study examined the Customer Relationship Management (CRM) practices used in selected airlines in the Nigerian Aviation industry. It investigated the factors influencing the effective deployment of Information and Communications Technology (ICT) for CRM and determined the effects of ICT on the performance of the industry. The study was conducted in the Head Offices of the local airlines (Lagos state and the Federal Capital Territory Abuja). A multistage sampling technique was employed to select ten local airlines and ten travel agencies. Two hundred Airline passengers were randomly selected for the study. Primary data were collected using three sets of questionnaire. Data obtained were analysed using appropriate descriptive and inferential statistics. The study revealed that the adoption of ICT in airlines operations significantly reduced operational costs ($r = -0.791^*$, $p = 0.011$), improved service quality ($r = 0.732^*$, $p = 0.025$) and improved identification of high value customers. The study concluded that the effective deployment of ICT assisted the Airlines in rendering better services to their passengers and facilitated a robust performance of their operations.

Keywords

Airlines, CRM, ICT and Nigeria.

1. INTRODUCTION

1.1. Background of the study

Air Travel in Nigeria commenced during World War II (1939-1945) when it became necessary to move troops and supplies fast across the country. Several air strips were built then which were converted after the war, to Civilian use [12]. Nigerian Airways was established in October, 1958 as a Joint Venture among the Nigerian Government, Elder Dempster Lines and the British Overseas Airways Corporation (BOAC). The Nigeria Airways took over the operation of the industry in 1963 and operated a fleet of nineteen aircraft consisting of two each of Boeings 707 and 737, one DC 10-30 aircraft used mainly for international flights, seven F.28 Jets and seven Folder F.27 propeller aircrafts used mainly on domestic routes in 1976 [11]. There are other major international airlines which operate flights to Nigeria, thereby linking Nigeria with the World's major socio-economic and political centers. This industry was later deregulated and Virgin Nigeria was rebranded to Air Nigeria [20].

By realizing the role of air transport system in the economy, Nigerian Government developed both its physical and human capital such as airport infrastructures and manpower development respectively in the aviation industry [12]. Statistics revealed an increase in the use of air transportation in Nigeria [15].

Airlines are advanced users of ICTs and a number of airline activities depend heavily on ICT [8]. Distribution and collaboration with partners is perhaps one of the most critical areas of ICT contribution [18]. Many low-cost carriers rely exclusively on ICTs for displaying their availability and for communicating and transacting with their clientele. ICTs are equally important in operations management and contribute to the optimization of procedures and processes [13] as well as for softer service elements such as in-flight entertainment and customer service [4]. In addition, [14] noted that the choice of airline travelers is not only driven by frequent flyer programs but also by price, schedule, product attributes, customer service and individualization. The choice was attainable for the travellers due to the use of CRM tools. There are many benefits to be gained for airlines and airline passengers; firstly, passengers could book and check in through internet 24 hours, 7 days a week, at anytime, anywhere. Secondly, airlines could reduce sales cost.

1.2. Statement of the problem

Airlines in today's global market place are faced with increased competition and decreased profit margins. The challenge is creating and sustaining profits in the face of increasingly stiff competition and product homogenization; another fundamental quandary among airlines is the inability to differentiate the functions of a holistic CRM program from their customer incentive programs and frequent flyer programs. Literatures have established that Information and Communications Technology (ICT) can facilitate customer relationship management (CRM) practices to proffer solutions to these challenges [2][22]. However, there is a dearth of information on the application of ICT in CRM in the Nigerian Aviation Industry. Hence the study intends to investigate the application of ICT in CRM in Nigerian Airlines.

The broad objective of the research is to investigate the application of ICT in CRM in selected airlines in Nigeria; while the specific objectives are to:

- i. examine the CRM practices in selected airlines;
- ii. investigate technological factors influencing the effective deployment of ICT in CRM; and
- iii. Determine the effects of the deployed ICT on airline performance.

1.3. Justification of the Study

The study provided information on the factors influencing the adoption of ICT in CRM. The study also revealed information on the consequence of an effective implementation of CRM programs in the airline industry. The study further showed the significance of ICT in the performance of airlines in Nigeria. This study aimed to make effective industrial policy for the airlines in Nigeria. This study is ordered in this format; Introduction, literature review, methodology, results and discussion, conclusion, recommendation, and further study.

2. REVIEW OF LITERATURE

2.1. Conceptual review

According to [21], Customer Relationship Management (CRM) has generally been assumed to create a competitive edge for an organization, as well as to have a positive impact on organizational performance. Customer Relationship Management (CRM) answers airline business models such as the category of the airlines passengers, their needs and aspirations. CRM is about acquiring customers, knowing them well, providing services and anticipating their needs.

Nigeria is classified as an emerging market and is rapidly approaching middle income status with its abundant supply of resources; well-endowed communications, financial sector and stock exchange [3]. Nigeria economy needs efficient air transportation. Furthermore, the size of the country coupled with geographically diverse regions, difficult terrain and water bodies necessitate the use of efficient air transportation.

2.2. Empirical review

Studies have shown the impact of information technology on organizational performance [1][17]. Furthermore, [16], present the analysis of four airline companies and their use of internet to provide innovative capability for transactional mechanisms with passengers. He revealed that internet has augmented the expectations of passengers for the service delivery and became indispensable to the strategic development of the airline companies. However, internet enables airlines to build a direct and superior relationship with passengers and makes passengers to be independent in their decision on the fares, routes and various services relating to their journey and lead to the improvement in the process efficiency such as provision of more detailed and up-to-date information, and reduction in the transaction cost from the end point of customers. He further noted that exploitation of the internet at the customer interface has become a key catalyst in the transformation of the airline industry. This was further corroborated by [9] that examine the impact of CRM on firm performance using a hierarchical construct model and RBV of firm, it was discovered that strategic CRM endogenously determined function of the organization's ability to harness and orchestrate lower order capabilities that comprise physical assets such as IT and organization capabilities. They concluded a positive and significant relationship between a superior CRM capability and firm

performance. They further note that CRM initiatives that collectively accentuate client intimacy, cost reduction and analytic intelligence outperform those that take a less balanced approach.

[19] aims at exploring the theoretical foundations of customer relationship management and its relationship to the marketing performance in the financial institutions. The study used interview for data collection and concluded that there is strong positive relationship between CRM and marketing performance in the financial institutions.

Also, [21] revealed the effect of CRM on relationship marketing and business performance in banks and financial institutions in Golpayegan city. The study deployed CRM tools; internet services, customer support and marketing support. Relationship marketing was evaluated based on four criteria such as utility, project-ability, legitimacy and reciprocity, while business performance was based on four criteria of balanced scorecard which consist of financial, customer, internal process, learning and growth. Data were collected via three sets of questionnaires; situation of customer relationship management implementation and level of relationship marketing and performance evaluation. The study concluded that customer support and marketing support influenced relationship marketing among criteria of customer relationship management, and also relationship marketing has impact on four criteria of business performance.

In addition, [5] carried out a study of the effect of CRM on the profitability of selected financial institutions and used questionnaire for research instrument. The study concluded that CRM leads to customer satisfaction which brings about customer loyalty and retention and resulting to increasing sales and profit.

2.3. Theoretical review

This study is based on Resource-Based View (RBV). This view believed that the performance of a firm is influenced by its internal resources and capabilities i.e a firm obtains better performance by efficiently using its resources relative to its competitors [1]. Furthermore, RBV noted that organizations that possess valuable resources can successfully implement business strategy to create competitive advantage and consequently improve organization performance [7]. Furthermore, [6] examined the effects of CRM implementation on organizations' performance and on their competitive advantage. The study was based on resource-based view of the firms and customer centricity approach and noted that CRM strategy is conceptualized as a useful tool employed by organizations to increase customer value and to create a desired customer experience by effectively enhancing their service capabilities given to their customers. The study is a descriptive survey research on twenty two banks drawn randomly from Egyptian market and concluded that there is positive relationship between CRM implementation and banks performance and their competitive advantages.

3. METHODOLOGY

The study was conducted in Lagos State and the Federal Capital Territory Abuja where the Head Offices of the local airlines were domiciled. A multistage sampling technique was deployed to select ten local airlines and ten travel agencies. Two hundred Airline passengers were randomly selected for the study. Primary data were

collected using three sets of questionnaire. The first set of questionnaire was administered on the airlines and elicited information on CRM practices such as Frequent Flyer Program, factors influencing the deployment of ICT, investment capability among others. The second questionnaire was administered on the travel agencies and elicited information on technological awareness and perceived ease of use of CRM among others. The third set of questionnaire was administered on the passengers and elicited information on factors such as customer satisfaction and cross-selling. Data obtained were analysed using appropriate descriptive and inferential statistics.

4. RESULTS AND DISCUSSION

Table 1: Summary of Questionnaire Administered and Retrieved in the Study Area

Type of Respondents	No of Questionnaire Administered	No of Questionnaire Retrieved	% Retrieved
Airline Passengers	200	176	88
Airline Officials	30	25	83.3
Travel Agencies	10	8	80
Total	240	201	83.8

4.2. Customer Relationship Management (CRM) practices among the selected Airlines

The CRM practices investigated among the selected Airlines include the service of airlines operators have appropriate value for payment, easy access to preferred airline, medium of communication in lodging complaints, satisfactory answers to complaints, awareness of frequent flyer program among airline service providers and membership of the frequently flyer program.

4.1. Questionnaire Administered And Retrieved

Table 1 shows a summary of questionnaire administered and retrieved in the study area. A total number of one hundred and seventy six questionnaires were retrieved from respondents out of two hundred questionnaire administered to airline passengers making eighty-eight percent (88%). Also, in airline officials, a total number of twenty five questionnaire was retrieved out of thirty that were administered thereby making 83.3% response rate and eight questionnaire were retrieved out of ten administered to travel agencies thereby making eighty percent (80%) response rate.

Table 2 presents the frequency of usage of CRM practices adopted by the selected airlines. The use of frequent flyer programs, user-friendly website, Website assurance/information security, Information quality on the website and service differentiation were shown to be very high in usage in their CRM operations while field officers, artificial intelligence and Radio frequency identification were highly in used. While recommender systems was moderately in used in their CRM operations.

Table 2 Descriptive Statistics of CRM Practices among the selected airlines

CRM Practices	Mean
Use of Frequent Flyer Programs	4.00
Service Differentiation	4.00
Use of Field officers	3.67
User-friendly website	4.00
Website assurance/ information security	4.00
Use of Artificial Intelligence	3.33
Radio Frequency Identification RF.ID	3.00
Use of Recommender System	2.67

Key: 0=Very Low, 1= Low, 2=Moderate, 3= High, 4= Very High

The analysis as shown in table 3 revealed that 98.9% of the passengers agreed that the services of airline operators give appropriate value for the payment made. About 98.4% reported that they often find it easy contacting preferred airline anytime they intend to. Table 3 further revealed that majority (74.4%) of the respondents preferred phone communication while lodging complaints. About 98.4% agreed that complaints were answered satisfactorily by the airline service providers. Concerning

the level of awareness of airline operators offering a frequent flyer program, table 3 showed that about 95% of the respondents agreed that they were aware of airline operators offering a frequent flyer program though, majority (75%) of the respondents were not members of preferred frequent flyer program. Holistically, the study revealed that majority of the respondents has the opinion that airline CRM services are satisfactory.

Table 3Percentage Distribution of Passengers Perception of the Customer Relationship Management (CRM) practices in Airlines

Parameters	Percentage (n= 176)
The services of airline operators gives appropriate value for the payment made	
Yes	98.9
No	1.1
Total	100.0
Often finds it easy contacting preferred airline	
Yes	98.4
No	1.6
Total	100.0
Medium of communication use in making complaint	
Internet	25.6
Phone	74.4
Total	100.0
Complaints answered satisfactorily	
Yes	98.4
No	0.5
Undecided	1.1
Total	100.0
Aware that the airline operator offer a Frequent Flyer Program	
Yes	95.0
No	1.1
Undecided	3.9
Total	100.0
If Yes, are you a member of the Frequent Flyer Program	
Yes	25.0
No	75.0
Total	100.0

4.3.Factors responsible for the effective deployment of ICT in Customer Relationship Management (CRM) practices of the selected airlines

The factors responsible for the effective deployment of ICT in Customer Relationship Management in the selected airline operators were divided into three main parts: motivating factors, CRM adoption factors and CRM

challenging factors. Out of those factors that are influencing the use of ICT in the Airlines, as shown in table 4; time efficiency, information quality, aid in making informed decisions, accuracy of information, integrity and security of information, prompt response to customers enquiries and queries all had a mean score of 4 which means that they have high influence on the effective deployment of ICT in CRM. While convenience and user friendly applications had mean value of 3.9 and 3.0 respectively which means that the two factors were

moderately influencing the effective deployment of ICT in CRM of airline operators.

Table 4 Motivating Factors responsible for the deployment of ICT for CRM of the selected airlines

Indicators	Mean Rank
Convenience	3.9
Time efficiency	4.0
Help in making informed decisions	4.0
User friendly applications	3.0
Quality of information on website	4.0
Information is safe and secure	4.0
Accuracy in information provided	4.0
Prompt response to customer queries	4.0

Key: 1 =No Influence, 2=Average Influence, 3= moderately influence, 4= High Influence

Hence, the factors that influence the use of CRM in airline operations, as illustrated in table 5 revealed that three out of four factors were shown to have the mean of 4 on the scale of 4. This means that the three which are industry alliance, high investment and customer needs, out of the four factors were having very high influence on effective deployment of ICT in Customer Relationship Management

(CRM) practices of the selected airlines. Competition between peer organizations has mean value of 3 which mean that competition was moderately influencing the adoption of CRM in airline operation. From these analyses, it can be concluded that each of the factors considered were having a high degree of influence on the adoption of ICT in CRM among the selected airlines.

Table 5: Factors influencing the adoption of CRM in airline operations.

Indicators	Mean Rank
Industry Alliance	4.0
High Investment	4.0
Competition	3.0
Customer needs	4.0

Key: 1 =No Influence, 2=Average Influence, 3= moderate Influence, 4= High Influence

With regards to challenges faced with the use of ICT services and applications in CRM, as shown in table 6, the topmost perceived challenge that have a very high influence with the use of ICT services in CRM was delay due to network failures on transaction (mean =4) on a scale of 4 points. Other perceived challenges that have

high influence in the use of ICT include too many steps/procedures (mean = 3), network insecurity (mean =3) and application complication (mean =3) among others. This means that the challenge were very high and high respectively with the use of ICT service in CRM.

Table 6 Challenges faced with the use of ICT services in CRM

Parameters	Mean
Delay due to network failures on transaction	4.00
Too many steps/procedures	3.00
System malfunction	1.67
Network insecurity	3.00
Slow speed of user adoption	2.00
Application are complicated	3.00
Lack of enthusiasm by staff to embrace new technology	0.00
There are skills gaps among ICT staff	1.33
Business and ICT activities are not integrated	1.33

Key: 0=Very Low, 1= Low, 2=Moderate, 3= High, 4= Very High

4.4.Effect of ICT on Airlines Performance

The various ICT devices that are available for airlines operations and how they affect Airlines Performance are

showed in table 7 and 8. The table 7 revealed that most of the airlines adopted the popular ICT devices such as desktop with 29.2% and laptop with 24.2% while mobile phones and tablets with 23.1% and 23.1% respectively were equally used.

Table 7 ICT devices available for the airline’s operations, adoption and effects on firm performance

Classification	Percentage
Mobile phone	23.1
Desktop	29.2
Laptop	24.6
Tablet	23.1
Total	100.0

Table 8 presents the impact of technology adoption on CRM operations among the selected airlines. The use of frequent flyer programs, service differentiation, the use of field officers, user-friendly website, and website assurance/information security were shown to be very

effective in CRM operations of the airlines in comparison with others. While the use of Artificial intelligence, Radio frequency identification and the use of recommender system were also described to be effective in the CRM operations of the airlines.

Table 8: Impact of Technology Adoption on CRM Operations

CRM Practices	Mean
Use of Frequent Flyer Programs	4.00
Service Differentiation	4.00
Use of Field officers	3.67
User-friendly website	4.00
Website assurance/ information security	4.00
Use of Artificial Intelligence	3.33
Radio Frequency Identification RF.ID	3.00
Use of Recommender System	2.67

Key: 1 = Rarely effective, 2 = Averagely Effective, 3 = Effective, 4 = Very Effective

Table 9 shows a significant correlation between ICT applications and airline performance. Specifically the study revealed a significant and negative correlation between ICT applications and cost reduction ($r = -0.791^*$, $p < 0.05$), which means that improvement in the ICT applications adopted by the airlines will lead to decrease in the cost of airline operations. In addition, ICT applications and service quality ($r = 0.732^*$, $p < 0.05$) were significantly

positively correlated which means that improve ICT applications will leads to improve quality of service of the airline operations. Furthermore, ICT applications and Identifying High-Value passengers ($r = 0.791^*$, $p < 0.05$) were significant and negatively correlated which means that improve ICT applications will leads to improve identification of high identification of high value passengers.

Table 9: Correlation analysis of the effects of ICT adoption on Airline performance

Effects of ICT Adoption	R	P value	Remark
Cost reduction	-0.791 [*]	0.011	Significant
Improves service quality	0.732 [*]	0.025	Significant
Identifying high-value customers	0.791 [*]	0.011	Significant
*Correlation is significant at the 0.05 level.			

5. CONCLUSION AND RECOMMENDATION

The study concluded that the effective deployment of ICT in CRM assisted the Airlines in rendering better services to their passengers and facilitated a robust performance of their operations. The study recommends that Airlines in Nigeria should improve on their CRM practices and the factors influencing the effective deployment of ICT in CRM of their operation.

6. FURTHER STUDIES

- The study only consider local airlines, further studies should consider both local and international airlines and compare the result.
- The study did not consider airline regulatory agency, further studies should consider regulatory agency in their sampling frame.

7. REFERENCES

- [1] Mohammed, A. A. and Rashid, B. B. 2012. Customer Relationship Management (CRM) in Hotel Industry: A framework Proposal on the Relationship among CRM Dimensions, Marketing Capabilities and Hotel Performance. *International Review of Management and Marketing*, 2(4), 2012, pp.220-230.
- [2] Abdullateef, A.O., Mokhtar, S.S., Yusoff, R.Z. 2010. The impact of CRM Dimensions on Call Center Performance. *International Journal of Computer Science and Network Security*, 10(12), 184-195.
- [3] Agbo, A. 2008. 'Back with a But', Cover Story *TELL*, Nigeria's Independent Weekly. (1).
- [4] Alamdari, F.1999. Airline Inflight Entertainment: The Passengers' Perspective Travel agent Monitoring and Management, *Journal of Air Transport Management* 5 (5), pp.203-209.
- [5] Ampoful, 2012. *The Effect of Customer Relationship Management (CRM) on the Profitability of Financial Institutions – A case Study of Barclays Bank Limited, Takoradi Branches. A thesis submitted to the institute of Distance Learning, Kwame Nkrumah University of Science and Technology in partial fulfillment of the requirement for the degree of COMMONWEALTH EXECUTIVE MASTER OF BUSINESS ADMINISTRATION.* Access on 20th 02, 2016.
- [6] Azza, E. B. 2014. The Effect of Customer Relationship Management on Organizations performance and Competitive Advantage Effect of Process and Information Technology. *Proceedings of 9th International Business and Social Science Research Conference* 6 - 8 January, 2014, Novotel World Trade Centre, Dubai, UAE, ISBN: 978-1-922069-41-2.
- [7] Barney, B. J., Delwyn, N. 2007. *Resource-Based Theory: Creating and Sustaining Competitive Advantage*. Oxford: Oxford University Press.
- [8] Christensen, J. 2000. *IT and Business: a History of Scandinavian Airlines*, Aarhus University Press, Århus, Denmark.
- [9] Coltman, R. T., Devinney M.T., and Midgley F. D. 2009. *Customer Relationship Management and Performance*. Faculty and Research Working paper, Printed at INSEAD, Fontainebleau, pp 1-39.
- [10] Eid, R. 2007. Towards a Successful CRM Implementation in Banks: An Integrated Model. *The Service Industries Journal*, 27(8), 1021–1039.
- [11] Filani, M.O. 1983. *'Air Transportation in Nigeria' Second Edition*, Heinemann Education (Nigeria) Ltd.
- [12] Ileoje, N.P. 2003. *'A New Geography of Nigeria' Fifth edition* Ikeja, Lagos: Longman Nigeria Plc.
- [13] Jo. G., Jung. J. and Yang. C.1997. 'Expert System for Scheduling in an Airline Gate Allocation, Expert Systems with Applications', 13 (4), pp. 275-282.
- [14] Nadja K. 2004. 'Customer Relationship Management: Going Beyond a Frequent Flyer Program. Ascend: A Magazine for Airline Executives 2004, (2).
- [15] National Bureau of Statistics, 2005. 'The Nigerian Statistical Facts sheet on Economic and Social Development'. NBS Abuja, June.
- [16] McIvor A. 2003. 'The Use of ICT in the Airline Industry Tourism Essay' Accessed on 02/07/2015.
- [17] Ozgener, S., Iraz, R. 2006. Customer relationship management in small and medium enterprises: The case of Turkish tourism industry. *Tourism Management*, 27(6), 1356-1363.
- [18] Shon, F. C. and Chang, Y. 2003. 'Airline E-Commerce: The Revolution of Ticketing Channels, Journal of Air Transportation', pg.325–331.
- [19] Soliman S.H. 2011. Customer Relationship Management and its Relationship to the Marketing Performance. *International Journal of Business and Social Science*. 2(10), pp 166-182.
- [20] Suleiman, I. L. 2012. 'An Analysis of Air Transportation in Nigeria' Department of Basic and Applied Science, Hassan Usman Katsina Polytechnic, *Katsina Journal of Research in National Development (JORIND)* 10 (2). www.transcampus.org./journals, www.ajol.info/journals/jorind.
- [21] Vahdati Z., Abdolmanafi S., Sarlak A., 2014. Investigating the impact of customer Relationship management on relationship marketing and performance. *International journal of Economy, management and Social Science*.1(3), pp 425-430.
- [22] Yueh, C.L., Lee, Y., Barnes, F.B., 2010. The effects of leadership styles on Knowledge-Based Customer Relationship Management implementation. *International Journal of management and Marketing Research*, 3(1),1-19.