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ANALYSIS OF DETERMINANTS OF AIRLINES PRODUCTIVITY IN NIGERIA DOMESTIC NETWORK

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ABSTRACT

This study set out to ascertain the determinants of the productivity of the Nigerian airline industry. The study superficially examined the extent of these determinant factors on airline productivity. In the study, quantitative techniques such as one simple t-test and Friedman's rank test and were employed. The data used in the study were both secondary and primary data collected from the airline employees and customers (passengers) in selected airlines of MMA and Port Harcourt International airport in Nigeria, using structured questionnaires and oral interviews. The critical factor affecting airline productivity in Nigeria is Sincere and responsive attitude to passenger complaints, with a mean rank of 26.79. This is closely followed by Age of aircraft, with a mean rank of 26.09, and Technical qualities/success to complete a trip, with a mean rank of 24.68. The least factor in order of importance is prompt response of employees of the airline to your request or complaints, with a mean rank of 13.74. Hence certain factors are more critical to airline productivity in Nigeria.

INTRODUCTION
BACKGROUND TO THE STUDY

The major problem for Nigeria's immediate and longer term economic welfare is a large and rapidly increasing foreign debt. Rather than continued reliance on commodity prices particularly for petroleum products, Nigeria must also increase its performance in servicing and manufacturing industries to expand exports and replace imports. Transport can contribute, through productivity improvements, to improving the competitive positions of our products and also, more generally, by appropriately minimizing the transport components of all production and commodity costs. Such productivity improvements are being sought through government policies and regulations, and the provision and management of infrastructure and transport services. Each year, numerous factors inputs of production are engaged in the supply of the airline services in Nigeria. These production inputs are very expensive to put together and turned into finished product/services. They could have been used for other uses so that the actual cost of providing airline services is the cost of other alternatives that the inputs could been used to produce.

Productivity in an airline industry was encouraged through deregulation and privatization, where private ownership is encouraged, except for fixation and control of fares, and the safety standard for its operation. Deregulation has led to proper management accountability and responsibility on the part of aircraft utilization, in such a way that lives and interest of passengers are protected. The essence was to encourage more people to fly within and outside Nigeria for instance, with indigenous airlines (such as Arik) at an affordable rate, and at the same time opening up O-D (origin-destination) markets for competition within themselves and between their foreign counterparts. Ekeugo 2015 has it that passenger's traffic at the 20 airports of the country was 7.1 million, which indicates growth of the industry (i.e. productivity). As a result of this increase in growth, that government decided to improve on the aviation sector. Stephens and Ukpere, (2011), opine that the growth in domestic air traffic is expected to rise to 10,129,886.8 passengers, which Arik air limited had announced to have attained.

However, the airlines for quite a long time have been the state-regulated public service provider world-wide (Holloway, 2001). Various governments like in the US, Pakistan, India, Nigeria to mention but a few, and many others have strong controls over their operational scope and their pricing mechanism. For instance, in Nigeria, the government directions are quite visible in many areas like route / market selection, aircraft procurement, managerial requirements and recruitment, fare fixation, competitive facing. The practice of regulation is clearly

against the spirit of competition with government controls as the so-called principle device for assuring good performance. Seemingly, the goal of every state control is to maximize the economic efficiency by providing adequate, safe and economic services to the public with reduced production cost (Michael, 2005), but this is not true in every case. You can acknowledge with us that, the more strict controls are applied by the state, the more inefficient is the result. But on a more precise note, the more unrestricted and rampant competition are, the more effective, efficient use of resources, which will prevent the losses that accrue from under-utilization of asset as seen from the case of Pakistan airline, which is recording the daily utilization factor of 8 hours against the industry standard of 11–12 hours a day (WATS 2010).

Most of the costs like sales, tickling, reservation, passenger handling, are linked to number of travelers not to distance. A single travel by Arik airline to Lagos from Owerri (Sam Mbakwe Airport), will incur less cost, than three travelers to Lagos, in both cases, the distance will be almost the same. However, it is obvious that the airline industry suffers economic losses and financial problems. Against this backdrop, there is the need to examine the productivity   of the airline industry, if possible, we can justify the huge inputs (i.e. aircraft and employee) put into the industry annually. The determinants of productivity can be classified under five broad headings (Caves, 1992; and Mayes *et al.* 1994). First, lack of competition is believed to induce unproductivity. Three measures are used to estimate the effects of competitive conditions on unproductivity: firm concentration; openness of the market; and the rate of contestability. Second, managerial and organizational factors may influence the activities of any firm. These factors include the ownership structure and the extent to which the organization is unionized, among others. Third, the structural heterogeneity between organizations can lead to structural productivity differences. This may include heterogeneity in production processes. Fourth, dynamic factors are thought to foster productivity. These include R&D facilities, innovations and market growth. Finally, public policy may influence the incentives to improve productivity. Government regulations as well as the subsidies are policies, which could adversely influence the productive productivity of activities.

It is important to note that these determinants are not clear in predicting the extent of unproductivity in each industry. They are not increasingly expressed in terms of technical inefficiency in the strict sense of Farrell (Mayes *et al.* 1994). Thus the theoretical foundation for explaining technical productivity may be imprecise relative to the methodologies for measuring it. However, it is essential to go beyond performance measurement for a much more systematic study of the causes of unproductivity. This could assist in developing policies towards improving performance while exploring the determinants of unproductivity.

The study of airline productivity is important in order to ascertains how efficient and effective, reliable, safety, comfort and flexible, the airline operations had been. The study of airlines productivity is pertinent due to, the lives of would be passengers, the lives of the crews on board (ie cockpit and cabin crew); the development of the economy, leading to more foreign investment, employment opportunities and revenue generation; efficiency and security of facilities/equipment, loss of manpower to the nation, and more utilization of over domestic airports and its equipment. This paper tries to examine factors affecting airline productivity (both aircraft utilization and passenger operation), in Nigeria. In addition, it will determine the relative importance of airline productivity factors.

METHODOLOGY

A questionnaire was designed, after some consultations, to reflect the goals and aspirations which the paper seeks to achieve. About six hundred and nine (609) copies of questionnaires were retrieved against eight hundred (800) questionnaires administered to the airlines selected for completion. This however, involved frequent visits to airlines involved in both MMA and Port Harcourt International Airports. Out of 800 copies of questionnaire distributed, 609 of them were retrieved representing about 76.1% response rate. About 36.9% of the respondents were from Arik Air while 32.2% of them were also from Aero contractors, while others represent 30.9% respectively. In terms of   their sex distribution, about 52.0% were females, while the remaining 48.0% were males. The percentages (%) were approximated to 1 decimal place. (See table below)

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TABLE 1
PERCENTAGE DISTRIBUTION OF SEX ACROSS THE AIRLINES

Airlines	Sex		Total (%)
	Male	**Female**	
Arik Air	15.8	21.1	36.9
Aero	15.1	17.1	32.2
Others	17.1	13.8	30.9
Total	48.0	52.0	100.0

From table 2, it could be observed that the highest proportion of the respondents' i.e. about 67.8% was in 26-32years age bracket followed by 33-39years age group with about 15.8% across the Airlines. While the least was in 40-46years age group with about 7.9% of the distribution.

TABLE 2
PERCENTAGE (%) DISTRIBUTION OF AGE ACROSS THE AIRLINES

Airlines	Age (years)				Total
	19-25	**26-32**	**33-39**	**40-46**	
Arik Air	4.6%	28.9%	3.3%	0.0%	36.8%
Aero	2.6%	23.7%	5.9%	0.0%	32.9%
Others	1.3%	15.1%	6.6%	7.9%	30.9%
Total	8.6%	67.8%	15.8%	7.9%	100.0

With respect to their education qualification, table 3 shows that most of them have first degree (Higher National Diploma-HND) and B.Sc.) which represents about 62.5%, while 21.7%, have Master degree and other professional qualifications. The least qualified among them had Ordinary National Diploma-OND, with 15.8% respectively.

TABLE 3
PERCENTAGE DISTRIBUTION OF EDUCATIONAL QUALIFICATION ACROSS THE AIRLINES

Airlines	Highest educational qualification			Total
	OND	First Degree (HND/B.Sc.	Masters and others	
Arik Air	5.9%	23.7%	7.2%	36.8%
Aero	7.9%	19.0%	5.7%	32.6%
Others	2.0%	19.7%	9.2%	30.9%
Total	15.8%	62.5%	21.7%	100.0

From tables, 2 and 3, it could be deduced that the airlines usually engage degree holders that are between 26-32years old. The aim could be to have crop of workers (employees) that can easily adapt to the changing technological ambience and also have considerable years of service for the airlines to recoup their investment in terms of training. The methods adopted in data organization are mainly tables, percentage and chart. One simple t-test, Friedman's rank test were used to analyze the data.

TEST OF RELIABILITY OF STUDY DATA

Reliability refers to the consistency, stability, of data collection instrument. A reliable instrument does not respond to chance factors or environmental conditions; it will have consistent results if repeated overtime or if used by two different investigator.

TABLE 4
RELIABILITY STATISTICS OF FACTORS OF AIRLINES' PRODUCTIVITY

Cronbach's Alpha	N of Items
.978	38

Cronbach's was used as an examination indicator to determine the reliability of the measurement scale. The value of Cronbach's alpha is generally required to be over 0.7 and the calculated results were over 0.978 in the factors of airline productivity using SPSS 19.0. From the output of research survey, it was observed that the reliability of all the 38 factors in the research sample, in terms of Cronbach's alpha, was greater than 0.7. This meant that the research measurement scale, applied in this study, was reliable.

RESULTS AND DISCUSSIONS

This study examined the determinants of productivity in the Nigerian airlines industry. First we used a general framework for explaining the determinants of airlines' productivity. Accordingly, some of the determinants for the Nigerian airlines were specified. The empirical findings confirm the detrimental effects of predetermined operational problems, Sincere and responsive attitude to passenger complaints and reliability of an airline. Airlines confronting competition may seek to exploit economies of scope and of density. Therefore they look favorably to the alliances and mergers.

TABLE 5 ONE- SAMPLE T-TEST OF FACTORS OF AIRLINES' PRODUCTIVITY IN NIGERIA

Factors of Airline Productivity	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Frequent flight cancellation	11.31	608	0.000	0.594	0.49	0.7
Poor inflight service	8.867	608	0.000	0.517	0.4	0.63
High cost of ticketing	10.034	608	0.000	0.609	0.49	0.73
Prompt attention to passenger' specification needs	8.32	608	0.000	0.47	0.36	0.58
Performing the services right the first time	10.655	608	0.000	0.483	0.39	0.57
Pilot technological skill/knowledge	17.156	608	0.000	0.772	0.68	0.86
Having other travel related partners e.g. car rentals, hotels and travel insurance	3.859	608	0.000	0.202	0.1	0.3
Image- The public perception about an airline	12.29	608	0.000	0.644	0.54	0.75
Technical qualities/success to complete a trip	19.978	608	0.000	0.926	0.84	1.02
Having sound loyalty programme to recognize you as a frequent customer	6.927	608	0.000	0.356	0.26	0.46
Easy access to ticketing channels	6.927	608	0.000	0.356	0.26	0.46
Employees instill confidence to passengers	9.745	608	0.000	0.532	0.42	0.64
Safety performance of airline	6.927	608	0.000	0.356	0.26	0.46
Probability of flight breakdown	13.687	608	0.000	0.658	0.56	0.75
Frequent cabin service rounds by flight attendants to passengers	17.156	608	0.000	0.772	0.68	0.86
Sincere and responsive attitude to passenger complaints	23.057	608	0.000	1.08	0.99	1.17
Capacity to respond to emergency sitiuation	11.31	608	0.000	0.594	0.49	0.7
Transfer services and efficiency at departure airport	8.867	608	0.000	0.517	0.4	0.63
Appearance, attitude and uniforms of employees	10.034	608	0.000	0.609	0.49	0.73
Provision of ground and inflight services consistently	8.32	608	0.000	0.47	0.36	0.58
Capacity to respond to cancelled flight	10.655	608	0.000	0.483	0.39	0.57
Prompt response of employees of the airline to your request or complaints	3.859	608	0.000	0.202	0.1	0.3
Convenient flight scheduling	12.29	608	0.000	0.644	0.54	0.75
Reliability of an airline	19.978	608	0.000	0.926	0.84	1.02
Delays due to aircraft turnaround times	6.927	608	0.000	0.356	0.26	0.46
Age of aircraft	24.231	608	0.000	1.115	1.02	1.21
Good business strategy of airlines	12.459	608	0.000	0.645	0.54	0.75
Average stage length flown	10.075	608	0.000	0.578	0.47	0.69
Average seats capacity	11.255	608	0.000	0.672	0.55	0.79
Total operating cost of an airline	9.459	608	0.000	0.527	0.42	0.64
Load factor	4.873	608	0.000	0.253	0.15	0.35
Average turnaround time	13.514	608	0.000	0.696	0.6	0.8
Mishandled baggage	7.979	608	0.000	0.406	0.31	0.51
Airline fare	7.979	608	0.000	0.406	0.31	0.51
Overall customer service	10.886	608	0.000	0.586	0.48	0.69
Ticketing/boarding	7.979	608	0.000	0.406	0.31	0.51
Advertisement about the airline	14.818	608	0.000	0.704	0.61	0.8
Financial stability or market share of an airline	18.342	608	0.000	0.814	0.73	0.9

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However, it seems evident that concentration can impede competition, results in excessively high fares and unproductivity. Subsidies also drive unproductivity by providing distorting competition in Nigerian aviation. In recent years, it has been strongly argued by the national aids for the private-owned carriers be eliminated except in very rare circumstances. Some of the airlines in Nigeria could not defend the utilization of the recapitalization largesse given to them the Jonathan administration.

Moreover, the empirical findings reveal that the state ownership did not provide an impediment for being efficient. When airlines operate on a commercial basis from which political objectives are excluded, being privately or publicly owned does not matter. Further, in order to remain competitive and efficient, the Nigerian airlines need to maintain their service quality – increase the load factors. The empirical work here suggests that future research may need to concentrate on the dynamic factors, i.e. the R&D facilities and innovation which could play a significant role in an industry's performance.

The potential explanatory variables for this analysis are determined according to the framework set above. It is worthwhile to note that the specification of the relevant variables is constrained by data availability. Managerial and organizational factors can affect airline's productivity. The effect of Age of Aircraft, Good Business Strategy, Average Stage Length Flown, Average Seats Capacity, Total Operating Cost, Flight Cancellation, Number of Accident in a Particular Airline, Load Factor, Average Turnaround Time, Flight Problems and Mishandled Baggage for example have been extensively examined in the study using t-test statistics. All the factors in this study contribute to airline productivity in Nigeria.

FRIEDMAN'S TEST RANKS OF FACTORS OF AIRLINES' PRODUCTIVITY IN NIGERIA
The Friedman procedure tests the null hypothesis that multiple ordinal responses come from the same population. Because the chi-square of 2572.799 for Nigerian airlines with 37 degree of freedom are unlikely to have arisen by chance, the 609 respondents interviewed do not have equal opinion on airline productivity factors. The asymptotic significance is the approximate probability of obtaining a chi-square statistics as extreme as 2572.799 with 37 degree of freedom in repeated samples if the rankings of factors affecting airline productivity in Nigeria are not truly different. Hence, this is satisfied in the study.

TABLE 6
FRIEDMAN TEST STATISTICS

N	609
Chi-Square	2572.799
df	37
Asymp. Sig.	.000
a. Friedman Test	

From the table 7, the critical factor affecting airline productivity in Nigeria is Sincere and responsive attitude to passenger complaints, with a mean rank of 26.79. This is closely followed by Age of aircraft, with a mean rank of 26.09, and Technical qualities/success to complete a trip, with a mean rank of 24.68. The least factor in order of importance is prompt response of employees of the airline to your request or complaints, with a mean rank of 13.74. Hence certain factors are more critical to airline productivity in Nigeria.

TABLE 7
FRIEDMAN'S TEST RANKS OF FACTORS AFFECTING AIRLINE PRODUCTIVITY IN NIGERIA

S/No	Factors of Airlines' Productivity according to relative importance	Mean Rank
1	Sincere and responsive attitude to passenger complaints	26.79
2	Age of aircraft	26.09
3	Technical qualities/success to complete a trip	24.68

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4	Reliability of an airline	24.68
5	Pilot technological skill/knowledge	22.29
6	Frequent cabin service rounds by flight attendants to passengers	22.29
7	Financial stability or market share of an airline	22.24
8	Average seats capacity	21.18
9	Advertisement about the airline	21.17
10	Average turnaround time	21.08
11	Probability of flight breakdown	20.58
12	Good business strategy of airlines	20.53
13	Image- The public perception about an airline	20.52
14	Convenient flight scheduling	20.52
15	High cost of ticketing	20.4
16	Appearance, attitude and uniforms of employees	20.4
17	Overall customer service	19.92
18	Average stage length flown	19.91
19	Frequent flight cancellation	19.64
20	Capacity to respond to emergency situation	19.64
21	Total operating cost of an airline	19.32
22	Poor inflight service	18.88
23	Transfer services and efficiency at departure airport	18.88
24	Employees instill confidence to passengers	18.75
25	Prompt attention to passenger' specification needs	17.98
26	Provision of ground and inflight services consistently	17.98
27	Performing the services right the first time	17.71
28	Capacity to respond to cancelled flight	17.71
29	Mishandled baggage	17.5
30	Airline fare	17.5
31	Ticketing/boarding	17.5
32	Having sound loyalty programme to recognize you as a frequent customer	15.88
33	Easy access to ticketing channels	15.88
34	Safety performance of airline	15.88
35	Delays due to aircraft turnaround times	15.88
36	Load factor	15.75
37	Having other travel related partners e.g. car rentals, hotels and travel insurance	13.74
38	Prompt response of employees of the airline to your request or complaints	13.74

CONCLUSION

The operation pattern of most Nigerian airlines affects their levels of productivity. Airlines that operates on long distant flights are more productive than those on short haul, which could be noted in the result of this study, that

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Aero contractor does more long distant flight with 31.4%, more than Arik Air with 16.7%. This means that airlines with high or longer stage length will in turn have less turn times, which, in the main, reflects proper utilization of aircraft (aircraft productivity). Efforts should be made to quicken the time spent on the ground by aircrafts of various airlines operating in Nigeria, as less time spent by aircraft on the ground enhances aircraft utilization, which will in the main boast productivity. Airlines, should as well allow passengers to have access to ticketing, printing of board passes, making reservations, which will trigger an increase in Airlines productivity in terms of employee productivity. Good service quality or characteristics should also be imbibed by various airlines operating across the nation to enhance and encourage passenger friendly patronage.

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