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PREFERENCES FOR NIGERIAN DOMESTIC PASSENGER AIRLINE INDUSTRY: A CONJOINT ANALYSIS

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ABSTRACT: *The increase in number of domestic airlines operators flying same routes has resulted in upsurge in competition for traffic among airline operators in Nigeria. In this light, this study evaluated Nigeria domestic airline services that are preferred by numerous airline passengers in the country. The study was carried out in Lagos; between September 3rd and 19th of October 2014. Random sampling technique was used for the study. Data were collected with pre-tested and validated questionnaire. The questionnaire was administered to 550 airline passengers. Information was gathered on air traveler's socio-economic characteristics, airline service characteristics, airlines of choice and the attributes that influences their preference decision. Data collected were analysed using conjoint analysis. Findings from the study showed that price (3.30) is the most preferred attribute followed by flight convenience (2.968), frequency of flight (2.906), comfort (1.294) and lastly courtesy (1.038) of the total utility of 11.506. However, the utility estimate shows higher preference for good on board comfort with a utility value of (1.294) over the excellent on board comfort while courtesy on the part of airline staff and workers contributes (1.038) of the total utility of 11.548 is next preferred by sampled airline passengers. The result concluded that airline passengers would prefer domestic airline with particular characteristics which are in order of off peak price, flight convenience in the morning, frequency of flight for 3 to 4 times daily, good on board comfort and good courtesy from staff. Thus Airline operators need to take the identified attributes preferred by customers very serious in provision of their services.*

KEYWORDS: Preference, Domestic, Conjoint, Courtesy, Passenger

INTRODUCTION

The Nigerian aviation transport sector is one of the most important drivers of national economy and development. The rapidly expanding aviation sector in Nigeria handles over 15 million passengers that board aircraft in the year 2014 (Nigerian Civil Aviation Statistics 2014) and the expected multiple increase in the current period, identifying various service characteristics of domestic airlines vis-à-vis the management of their customers becomes crucial.

Satisfaction of the customer is one of the ultimate goal or objective of any business manager. Admirable passenger satisfaction is one of the greatest values for air transport business in today's competitive environment. Satisfaction of passengers in terms of service arises when an airline firm can provide passengers with benefits that exceed their expectation. If customers are satisfied with the product or service which the company is providing then they will patronize more often. Thus,

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customer satisfaction is an important objective for each airline providing passenger services (Upadhyaya, 2012).

The emergence of more domestic airlines offering scheduled services led to increased level of competition for traffic amongst them. Loosely associated with this development is the issue of choice for potential travellers in this subsector and the choice of route by airlines as they compete for market share. The increase in number of operators flying same routes has resulted in more competition for traffic which now leaves the air travellers with the need to make a choice on which airline to fly with at any particular time. This decision can be difficult since the average air travellers in Nigeria are faced with relatively homogenous products. The problem then arises as to know what influences the air traveller in the choice of the airline to fly with. Most flight scheduled are closely spaced between in time, still passengers have been seen to patronize some airline (Ukpere et al. 2012). Furthermore, the customers have a wide choice to select the suitable airline product according to their requirements. Therefore, Nigeria domestic airlines companies need to continuously working on the in-flight product development and innovation to differentiate themselves from their competitors. In this light, this study seeks to evaluate Nigeria domestic airline services that are preferred by numerous airline passengers in the country with a view to providing the operators and other stakeholders in the airline transportation industry with 'what' and 'how'of passengers preferences in the country. There has been dearth of empirical literature evaluating consumer preferences in the transport sector in Nigeria, most especially the air transport. The very limited one existing studies such as Ukpere *et al.* (2012) was unable to provide adequate empirical solutions to the issue due to inappropriate methodological approach they employed. Hence, this study will fill this gap.

THEORETICAL FRAMEWORK

The theory of conjoint analysis (CA) originated from Lancaster (1996) who asserted that the utility of consumers is based on the characteristics or attributes a particular product possesses. Consequently, CA has been employed by several studies to examine preferences for various commodities or products. Following the advancement of studies on preferences especially in developed nations, a modification of CA was introduced by Louviere and Woodworth (1983) and called it choice based experiment also known as discrete choice experiments (DCE) in the current literature. The difference, however, lies in the methodological approach. The overall approach of the methods involves eliciting stated preferences of individuals for different options in a hypothetical setting. In this context, random utility theory is the appropriate theoretical base for preference studies. Thus, airline passengers' choice of whether or not to patronise a particular domestic airline can be modelled as a consumer utility maximization problem.

METHODOLOGY

This study was carried out in Lagos State, Nigeria. The state hosts the largest number of airline passengers in the country. Random sampling technique was used to obtain conjoint data from 550 airline passengers. Questionnaires were administered to air travellers in the Muritala Muhammed

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International Airports in Lagos. This survey was carried out between 3rd of September and 9th of October 2014. The questionnaires administered to the air travellers covered their socio economic characteristics, airline service characteristics, airlines of choice and the attributes that influences their preference decision. Data collected were analysed using conjoint analysis.

There are three (3) basic steps involved in the estimation of preferences using conjoint analysis (CA). First, relevant attributes peculiar to Nigerian domestic airline industry and their levels are defined in a way consistent with the customers understanding of the domestic airline industry. Second, an appropriate experimental design and survey instrument are constructed to collect the conjoint data. At this stage, a set of airlines profile is defined by combining their service attributes at various levels. Airline passengers were then asked to evaluate their overall preference for attributes they consider when choosing a domestic airline in Nigeria's busiest routes.The final step of CA involves the analysis of the customers' utilities for various attribute(s) that passengers can sacrifice if any for a lower price when choosing an airline.The part-worth utilities are the β's, the parameter estimates from the discrete model. For this study, conjoint analysis model is specified as follows:

$Y_{ijk} = \mu + \beta_{1i} + \beta_{2j} + \beta_{3k} + €_{ijk}$ ---------- *(1)*
Where $\sum\beta 1i = \sum\beta 2j = \sum\beta 3k = 0$
The y_{ijk} term is one subject's stated preference for an airline service with the *ijk* levels of preference. The predicted utility for the *ijk* product is:
$\hat{y}ijk=\hat{\mu} = \hat{\beta}1i = \widehat{\beta}\,2j = \hat{\beta}3k$ ---------- *(2)*

Five major service attributes were specified which are; Flight price, flight convenience, frequency of flight, on board comfort, courtesy, booking and ticketing. A full factorial design would involve 512 (4 x 4x 2 x 4x 4) airlines service characteristics combinations. Because the complexity associated with a larger number of choice sets in the design could affect airline passengers' decision, orthogonal fractional factorial design was used to reduce the combination to twelve (12). The IBM SPSS v21 software was used to design orthogonal attribute combinations and two holdout additional combinations for validation. From the orthogonal results, plan cards were generated which form the basis of questionnaire that were administered to airline passengers to rank their preferences (Table 1). The questionnaire collected was analysed using IBM SPSS v21. The conjoint analysis procedure in the software calculated coefficients expressed as utility value, standard error, importance value and correlation values.

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Table 1: Orthogonal Array Combination of Airlines Attributes

S/N	Card ID	Flight Price	Flight Convenience	Frequency of Flight	On Board Comfort	Courtesy
1	1	peak	4pm-7pm	Infrequent (1-2 flights daily)	good	good
2	2	off peak	9am-12pm	frequent (between 3-4 flights daily)	excellent	fair
3	3	corporate booking	4pm-7pm	Infrequent (1-2 flights daily)	excellent	poor
4	4	corporate booking	12pm-4pm	frequent (between 3-4 flights daily)	good	poor
5	5	corporate booking	9am-12pm	Infrequent (1-2 flights daily)	fair	fair
6	6	advance booking	7am-9am	Very infrequent (assigned flight days)	good	poor
7	7	peak	9am-12pm	Infrequent (1-2 flights daily)	poor	excellent
8	8	advance booking	12pm-4pm	Infrequent (1-2 flights daily)	fair	good
9	9	off peak	4pm-7pm	frequent (between 3-4 flights daily)	fair	poor
10	10	peak	7am-9am	frequent (more than 4 flights daily)	poor	poor
11	11	advance booking	4pm-7pm	frequent (more than 4 flights daily)	fair	fair
12	12	advance booking	7am-9am	Infrequent (1-2 flights daily)	excellent	excellent
13	13	off peak	7am-9am	Very infrequent (assigned flight days)	excellent	good
14	14	off peak	9am-12pm	frequent (more than 4 flights daily)	good	good

Author's field work, 2014

RESULTS AND DISCUSSION

The results of conjoint analyses to highlight the preferences of customers for attributes of domestic airline in Nigeria that influences their choice are presented in Table 2. Flight price is the most preferred attribute which contribute 3.30 of the total utility of 11.506 while the air passengers most

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preferred category of price is off peak price. After price, airline passengers showed higher preference for airline with flight convenience which contributes positive 2.968 of the total utility. The extent to which airline customers can transport themselves conveniently at the period of choice corresponding to airline availability will to a larger extent determine the preference for such airline. Frequency of flight is next preferred by airline customers with a utility range of 2.906. Whether an airline can fly frequently for 3 to 4 times daily or infrequently (1-2 times daily) will only be of interest to the airline passengers after the above attributes have been taken into consideration.

However, the utility estimate shows higher preference for good on board comfort with a utility value of (1.294) over the excellent on board comfort in spite of the premium satisfaction associated with it. Further from the analysis, courtesy on the part of airline staff and workers (which contributes 1.038 of the total utility of 11.548) is next preferred by sampled airline passengers. The airline passengers prefer airline that will not inflict direct and indirect dissatisfaction from its workers to their transportation mood. The result indicates that the preference range that would deliver the most utility for airline passengers would include airline attributes such as off peak price (1.650), flight convenience in the morning (1.484), frequency of flights for 3 to 4 times daily (1.453), good on board comfort (0.647) and good courtesy from staff (0.519). Domestic airlines that deliver services within the stated preference range would have successfully given to the airline customers what they prefer and how they prefer it while managing conflict of interest in airline transportation system.

Table 2: Utility Estimate of Consumer Preferences for Domestic Airlines in Nigeria

Attributes	Levels	Utility Estimate	Utility Range	Importance (%)
Price	peak	-1.650	3.30	24.852
	Off peak	1.650		
	Corporate booking	-0.825		
	Advance booking	-0.725		
Flight convenience	7am-9am	1.484	2.968	24.179
	9am-12pm	1.213		
	12pm-4pm	-1.484		
	4pm-7pm	0.204		
Frequency of flight	Frequent(3-4flights)	1.453	2.906	22.327
	Infrequent(1-2flights)	-1.453		
Comfort	Good	0.647	1.294	12.378
	excellent	-0.647		
	Fair	0.321		

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	Poor	-0.020		
Courtesy	Good	0.519	1.038	16.264
	excellent	-0.519		
	Fair	0.227		
	poor	0.102		
(Constant)		5.050	11.506	100.00

Data Analysis, 2014

In order to determine the influence socio-economic characteristics of airline passengers on their preference decision, ordered probit regression model were employed (Table 3). The diagnostic such as log likelihood is high and significant ($p<0.05$), indicating the fit of the model. Sex, family size, occupational status and air travelling experience are the significant factors found to influence airline customers' preference for domestic airline in Nigeria.

Table 3: Ordered probit regression model

Variables	Coeff	Z	Marginal effect
Age	-0.090	-0.73	0.098
Travelling experience	0.566	1.84**	0.047**
Family size	-0.159	-2.36***	0.015**
Religion	-0.107	-0.30	0.010
Education	-0.087	-0.60	0.0085
Occupational status	0.016	2.67***	-0.0016
Log likelihood = -405.09015			
LR Chi(2) = 10.45			
Pr> chi2 = 0.027			
N = 550			

, *, implies significant at 10% and 5% respectively

CONCLUSION

This study demonstrated the application of conjoint analysis in examining Nigeria domestic airline attributes that are important to airline passengers in Nigeria. Findings from conjoint analysis provide information that may not readily be obtained from the passengers on their attribute preferences. Conjoint results generally indicates that airline passengers would prefer domestic airline with particular characteristics which are in order of off peak price, flight convenience in the morning, frequency of flights for 3 to 4 times daily, good on board comfort and good courtesy from staff. Airline passengers' decisions for airline attributes are found to be significantly influenced by travelling experience of the passengers, family size and occupational status. Airline operators need to take the identified attributes preferred by customers very serious in provision of their services.

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FUTURE RESEARCH

The researcher offers the following direction to future researchers. Conjoint analysis can be employed to find preference for other mode of transport and since this particular study focus on Nigeria the tool can be used to find passenger preference for any particular mode in any country.

REFERENCES

Ukpere Wilfred I., Mobolaji S. Stephens, Christopher C. Ikeogu, Callistus. C. Ibe and Edem O. P. Akpan (2012) Determinants of airline choice-making: The Nigerian perspective. African Journal of Business Management Vol. 6(15), pp. 5442-5455

Upadhyaya, M. (2012).Customer Satisfaction Measurement In Airline Services: An Empirical Study Of Need –Gap Analysis. International Journal of Management and Strategy (IJMS) 3 (5) July-Dec.2012

Lancaster, K.J. (1966). A New Approach to Consumer Theory. Journal of Political Economy, 74:132-157

Louviere, J. J. and G. G. Woodworth (1983). Design and analysis of simulated consumer choice or allocation experiments: An approach based on aggregated data. Journal of Marketing Research 20:350-367.

Nigerian Civil Aviation Statistics (2014). Directorate of Air Transport Regulation

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