EVALUATING SUBSCRIBERS PREFERENCE FOR SERVICE ATTRIBUTES OF MOBILE TELECOMMUNICATIONS IN NIGERIA USING ANALYTIC HIERARCHY PROCESS (AHP)

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ABSTRACT

Policy and strategies in the growing Nigerian telecommunications industry can only have significant impact if they are substantially driven by research on what subscribers prefer and why they prefer it? Thus, there is a need for an operations research model (AHP) to evaluate customer preferences for their mobile telecommunications attributes in order to direct policy and strategies toward what is important to subscribers. This paper built a hierarchical model for choice/determinant of subscriber's preferences for mobile telecommunications attributes in Nigeria using seven main attributes as the criteria for evaluation. The four main players in the Global System for Mobile communication (GSM) market (MTN, Airtel, Glo and Etisalat) are the alternatives. An AHP based questionnaire was administered among students of tertiary institutions in Lagos. Out of the four hundred questionnaires distributed, three hundred and eighty six were completed, returned and found suitable for the analysis. The data was analysed, considering the set of evaluation criteria (service attributes), and a set of alternative (network providers) scenarios from which the best decision was to be made. We generated a weight for each evaluation criterion and scenario according to the information provided by the decision makers (stakeholders). AHP was used to combine the objective and scenario evaluations to determine the ranking for scenarios. The results revealed that an average student preferred network providers with low rates (affordable), followed by quality of connections and a reliable data plan for internet service. A priority was done for the criteria to direct strategic decisions in the telecommunication industry towards meeting subscriber's needs. Coverage was not given significant priority as the respondents assumed that all providers have similar coverage. The results of this study will help improve the quality of decision making by stakeholders.

Keywords: AHP; subscribers; preference; service attributes'; GSM; telecommunication

1. Introduction

Global System for Mobile communication (GSM) in Nigeria was introduced thirteen years ago and unlike when it was first introduced there is now an increasing need for mobile phone services by the average Nigerian. Besides, the subscriber identification module (SIMs) now goes almost for free to subscribers/customers as there is no disparity in the price it is sold to high, medium or low profile citizen as it was done when it was launched in 2001.

Subscribers who have an increasing need for the use of a variety of mobile telecommunication attributes are faced with a great deal of complexity in their decision making. They must not only decide which of the network providers to choose, but also decide which of the network providers is best suited to meet their economic, social and psychological needs.

The name Analytic Hierarchy Process explains its application logic (Silva, Alver, and Marins, 2009). Analytic means that it assists in the measurement and synthesizing of a series of factors involved in complex decisions. Hierarchy focuses on that fact that it is the adaptable way of finite intelligence to assume a complex situation. Finally, process is a series of actions, alterations or functions that leads to an end or result.

The continuous marketing efforts of network providers in Nigeria as well as the perceived ineffectiveness of the regulatory authority, National Communication Commission(NCC), in the telecommunication sector has made the evaluation of subscriber preferences for service attributes necessary. Using the AHP will produce results that are beneficial to all the stakeholders, as the subscribers will be provided with a rational way for decision making that requires comparisons, priority and tradeoffs. This powerful multi-criteria tool will allow the operator to understand what is important to subscribers among the criteria and in what order, so as to direct marketing effort/activities as well as strategies to enhance customer satisfaction. Also, the regulator (NCC) will benefit by understanding the needs and complaints of subscribers so as to balance the interest in their policies and also to assess how subscribers perceive the regulators.

This study is very important for the policy makers, subscribers, telecom operators and the growth of the Nigerian telecommunication industry since organizations in the 21st century can only survive the turbulent business environment when the needs and wants of the consumers/subscribers are identified and satisfied. Thus, the study helps evaluate the preferences of subscribers of the mobile services attribute in Nigeria, especially in relation to their day-to-day experiences using GSM.

2. Literature review

2.1 Application of AHP

AHP is one of the most popular and powerful methods for decision-making and was proposed by Saaty (1977, 1980). Since its inception, the AHP has been used by many individuals and groups in various fields because of its user-friendly interface for multi-criteria decision-making (Vargas, 1990). In the AHP process, data on decision maker's judgments, called pairwise comparisons, are aggregated and the degree of importance of each alternative is quantified for each decision-maker. This procedure

identifies not only the most important alternative, but also the preference for all alternatives for each decision-maker (Crawford and Williams, 1985).

AHP philosophy is based on the intention to provide a comprehensive and rational framework for structuring a decision problem, for representing and quantifying its elements, for relating those elements to overall goals, and for evaluating alternative solutions. The method is based on mathematics and psychology. Also, as a 'normative' model of decision making, as opposed to a 'descriptive' model which allows describing the way a Decision Maker (DM) actually makes decision, a normative model enables a DM to defend his choice over competing alternatives. Presenting and clarifying the essential concepts of AHP for the decision making process, Saaty (2008) submits that the measurement of concepts changes from one situation to another, and that they depend on a value system which varies from one person to another. Thus, their importance cannot be measured once and for all, but must be determined in terms of individual values. The most appropriate way to measure such attributes is by comparing their relative importance with respect to a higher goal. From the comparisons, one derives a scale of priorities which are in relative values. Judgments come first, priorities second.

The AHP method refers to 'alternatives', 'attributes' and 'goals'. The term 'alternative' is synonymous with 'option', 'policy', 'method' etc. The term 'attributes' may be referred to as 'objectives' or 'factors' or 'criteria'. In any problem scenario multiple 'attributes' exist, and in the problem-solving process a DM generates relevant attributes for each setting. Keeney and Raffia (1976) suggested the use of a literature survey and /or a panel of experts to identify the attributes in the problem area. Yoon and Hwang (1995) stressed the necessity that attributes represent the desired mission and suggested one way to derive the attributes hierarchically from a super goal; goal hierarchy formulation starts with the listing of overall performance objectives serving a super goal. They noted that this hierarchy should consist of at least three levels: focus or overall goal at the top, multiple criteria that define alternatives in the middle, and competing alternatives at the bottom.

Therefore, by applying the AHP to survey research questionnaires, respondent's perceptions can be clarified more precisely than by traditional methods (Sato, 2001). Thus, it would be more appropriate to not limit the study of subscribers/customer preferences for attributes to conjoint analysis (see, Oyatoye, Adebiyi and Amole, 2013a; Oyatoye, Adebiyi and Amole, 2013b), but for the customers/subscribers, who are the essence of telecommunication industry, to express their perceptions of the concept of mobile network attributes and their choice of a particular network provider through a pairwise comparison.

2.2 Conceptual model for the study

In this study, the mobile network attributes were chosen based on literature and a preliminary interview with some subscribers. The interview aimed at identifying those attributes that subscribers of mobile telephones valued most. This allowed for proper grouping of the attributes identified both from the literature and from the preliminary subscriber survey. Attributes identified include quality of calls, tariff, coverage, promotion, message delivery and complaint management. An average subscriber of a mobile phone needs to be satisfied with all of these attributes to a

reasonable extent in order for him/her to continue to patronize the network providers. This is important since the MNP allows him/her to switch providers and still maintain the same number. Besides, when the service providers know the value that subscribers place on each attribute comparatively then they can implement effective marketing strategies to keep the profitable customers and persuade potential subscribers to join their network.

The AHP methodology involves decomposition of the decision problem into a set of variables that are organized into a hierarchy, and enables decision makers to compare and make choices among a number of alternatives. It allows for criteria priorities and making a series of trade-offs among the criteria in relation to goals as well as the alternatives. The identification of the objective and the criteria were required to implement AHP for this study. The AHP model adopts the use of a diagram in the form of a hierarchy to model real-life situations (Saaty, 1980). The four levels of the model for this study were as follows:

First Level: The objective which is the evaluation of subscribers' preferences for service attributes of mobile telecommunications in Nigeria.

Second Level: Service attributes of mobile telecommunications in Nigeria which include quality of calls, tariff, coverage, data plan, promotion, message delivery and complaint management.

Third Level: The components of each service attribute of the mobile network provider in Nigeria. The sub-criteria to quality of calls include call clarity, call drop and connectivity. The sub-criteria of tariff include call/cost, SMS/cost and internet services/cost. The sub-criteria to coverage are wide, cities concentrated, and services while travelling. The sub-criteria to internet data plan include sufficient data with high costs, insufficient data plan with low cost, and sufficient data plan but not effective. The sub-criteria to promotional activities of the mobile phone services providers in Nigeria include free data services, free SMS and/or free calls. Under the message delivery criteria, the sub-criteria are prompt delivery, slow delivery, and poor delivery. The complaint management sub-criteria are response on time, respond late but effective and network providers' agent do not respond.

Fourth Level: The alternatives considered for this study were the following mobile telecommunication network providers in Nigeria: MTN, Airtel, Glo and Etisalat. These were in the market as the GSM carriers at the time of this study.

The AHP model for this study is shown in Figure 1.

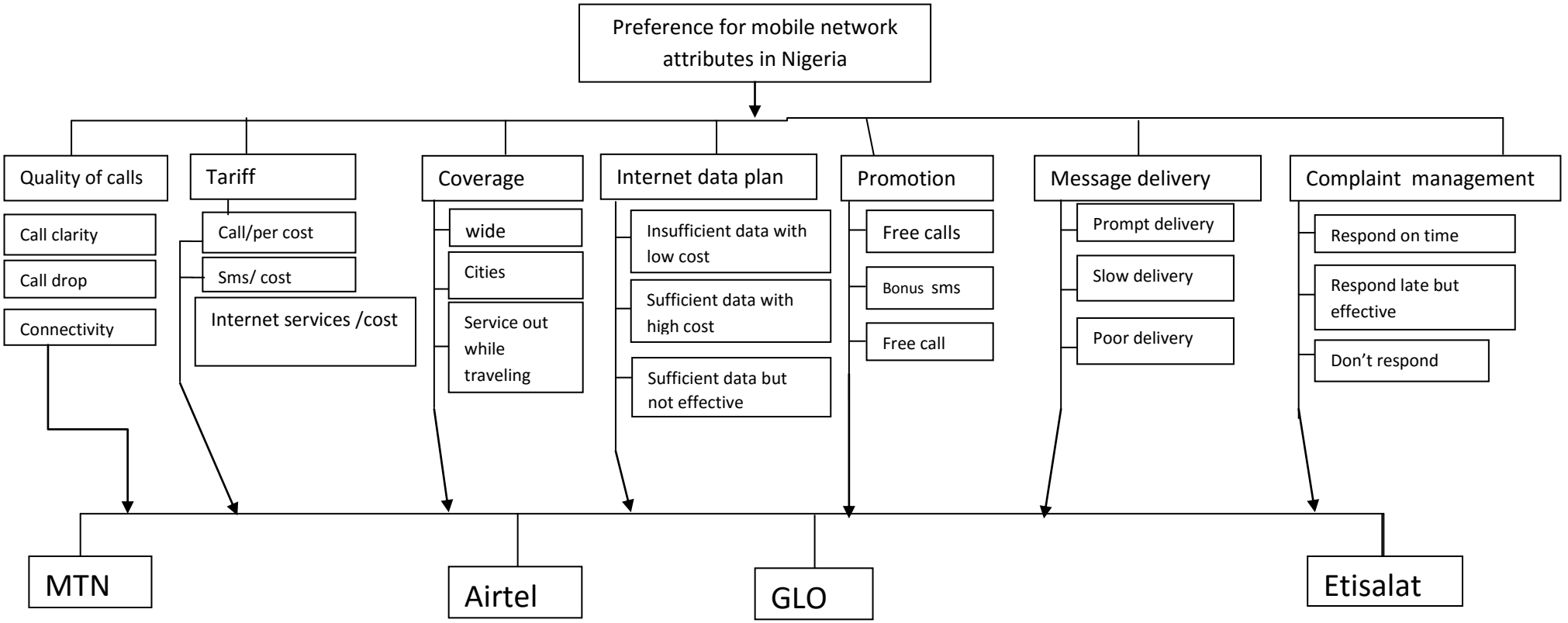

Figure 1. The AHP model

MTN = Mobile Telecommunication Network

GLO = Global Communication Network

ETISALAT = Emirates Telecommunications Corporation

3. Research methodology

This study was quantitative research which employed the application of AHP for evaluating subscriber's preference for mobile network attributes in Nigeria. The Analytic Hierarchy Process (AHP) is a mathematically based, multi-objective decision making tool which was introduced by Saaty (1990). It uses the pair wise comparison method to rank order alternatives of a problem that are formulated and solved in a hierarchical structure.

Table 1
Questionnaire distribution

GSM operator	**Sample using the network**	**Percentage (%)**
MTN	253	27.38
Airtel	246	26.62
Glo	219	23.70
Etisalat	206	22.30
Total	**924**	100

In this paper, a convenient sampling method was used to select four hundred subscribers of mobile network providers to complete the AHP based questionnaires. This sampling method was adopted since not all students and teaching staff could be reached at the time of questionnaire distribution. Three hundred and eighty six of the four hundred questionnaires distributed were appropriately completed and returned, thus, evaluation was based on the correctly completed questionnaires. From Table 1, it is evident that many of the respondents were patronizing multiple network providers, as the total subscriber identification module (SIM) of the 386 respondents increased to 924. The sample was drawn to include subscribers of the four active mobile telecommunication services providers in Nigeria. These are MTN, Aitel, Glo and Etisalat subscribers who completed the AHP based questionnaire about their experiences concerning the attributes listed with network service providers for comparisons in relation to the goal and alternatives. The questionnaires were distributed to people on the campuses of the three higher institutions of learning [University of Lagos, Akoka, Lagos, Nigeria (UNILAG); Yaba College of Technology, Yaba Lagos (YABATECH); Federal College of Education Technical, Akoka, Lagos, Nigeria (FCETECH)]. This group was comprised of students, staff (teaching and non-teaching), and visitors to the campuses, as well as the business people who could read and understand the questions. In order to get a prompt response, surveys were distributed in places where people could take the time to complete the questionnaire, such as a lecture room for students after lectures, offices of lecturers and non-teaching staff, the canteen/cafeteria, and relaxation centres to mention a few. 27.38 % of respondents reported patronizing MTN as their network operator. Airtel followed with 26.62% of respondents as subscribers, and Glo mobile and Etisalat followed with 23.70% and 22.30%, respectively. The respondents combined the network SIMs in various proportions as the researchers carefully sorted them out to enable the computation of the percentages shown in Table 1. The data retrieved were analysed using the IBM SPSS version 2.0 and Expert Choice 2000 software.

4. Data presentation, analysis and interpretations

Table 2
Frequency distribution of respondents by demographic status

Variables	Frequency	Percentage (%)
Gender		
Male	202	52.3
Female	184	47.7
Total	386	100
Age		
below 21yrs	172	44.5
21-30yrs	128	33.2
31-40yrs	49	12.7
41-50yrs	32	8.3
51 and above	5	1.3
Total	386	100
Marital Status		
Single	283	73.3
Married	98	25.4
Divorced	0	0
Widowed	2	1.2
Total	386	100
Educational Status		
Secondary	203	52.6
NCE/ND	81	20.9
B. Sc	61	15.8
MBA/M. Sc	14	3.7
Ph. D	5	1.3
Others	22	5.7
Total	386	100
Occupational status		
Teaching	36	9.3
Non-Teaching	52	13.5
Student	271	70.2
Others	27	6.9
Total	386	100
Income per Month		
Below 89 999	271	70.2
90 000-199 999	78	20.2
200 000-399 999	20	5.2
400 000-599 999	11	2.8
600 000-above	6	1.6
Total	386	100
Nature of SIM		
Prepaid (pay as you go)	303	78.5
Postpaid	21	5.4
Both	62	16.1
Total	386	100

Source: Field Survey, 2014

The results of the study show that 202 respondents were male while 184 were female respondents, representing 52.3% and 47.7%, respectively. Age distribution of respondents reveals that 172 (44.5%) were below 21 years, 128 (33.2%) were between the ages of 21 to 30 years, 49 respondents representing 12.7% were in the age grade 31- 40 , 32 (8.3%) were between the ages of 41-50 years, and 5 (1.3%) were above the golden age (50 years and above). Concerning the marital status of the respondents, 283 (73.3%) of the total respondents were single, and 98 (25.4%) were married at the time of this study. Only 2 (1.2%) were widowed, and none reported being divorced. The highest qualification held by a majority of our respondents at the time of this study is a secondary school certificate (WASSCE/GCE) (52.6%), followed by people with a national diploma (ND or NCE) (20.9%). Most of the respondents were currently acquiring higher education in the three institutions of higher learning used as case study. Twenty two (22) respondents, representing 5.7%, held professional qualifications, while the remaining 21.3% included both first and higher degree holders. Thus, with the level of education of our respondents, they were appropriate to fill the AHP based questionnaires. Many of the respondents reported being students, with 271 (70.2%) choosing student as their occupation. This category consisted of college of education students, National and Higher National Diploma students, undergraduates as well as postgraduate students. The remainder was made up of 36 (9.3%) teaching staff, 52 (13.5%) non-teaching staff, as well as 27 (6.9%) others. The majority of respondents claimed that they had an income less than 90, 000 naira per month with 70.2% (271) falling into this category. 29.8% of the respondents earned above 90, 000 naira per month. Many of the respondents claimed to be using prepaid SIM, while some used post-paid, and others combined both.

4.1 Consistency index (CI)

The consistency ratios of most of the pairwise comparison matrices were less than 0.1; hence, judgments of the respondents were assumed to be consistent, and therefore acceptable. Those that were inconsistent were revised through revised judgment procedures, which allows for the removal of values that are at the extreme and their replacement with appropriate values as suggested by the system from one analysis to another.

4.2 Composite priorities

The Analytical Hierarchy Process model used for this study has four levels: the goal, the criteria, the sub-criteria and the alternatives. The priorities for the customer's preference of the network attributes that determines their selection in SIM of network providers/operators in the Nigerian telecommunications industry are presented in the tables that follow.

Table 2
Composite priorities of the criteria with regard to subscriber's preference for mobile network attributes in the selection of a network provider

Goal: Evaluating preference for service attributes	Quality of calls (QoC)	Tariff (T)	Coverage (C)	Data Plan (DP)	Promotion (P)	Message Delivery (MD)	Complaint Management (CM)
Pooled Average Composite priority	0.192	0.291	0.078	0.160	0.116	0.085	0.078
Relative preference ranking	2	1	6.5	3	4	5	6.5

The criteria with respect to the goal of evaluating subscribers preference for mobile network attributes (which ultimately determines which network subscribers decide to patronize) revealed that an average customer preferred a good/cheap tariff system before considering the quality of calls. This follows economic theory which states that price will determine demand for goods and services. It is the willingness to buy, and the ability to pay that makes an effective demand. Subscribers also preferred a good data plan followed by frequent promotions/bonuses from their service providers, and good message delivery in that order. Both coverage and complaint management had equal priority. Thus, more subscribers will patronize network providers that have a considerate tariff in terms of calls, SMS and data plan. Any network operator that wants to attract more subscribers should focus on having a considerate tariff, closely followed by quality calls, a good data plan, ensure effective promotional mix, and good message delivery. Coverage and complaint management is of little importance to susbcribers compared to the five previously mentioned attributes. This can serve as a policy guide to service providers, as it will assist in performing the first basic function of marketing which is customer need and want identification. It will also help to redirect the marketing efforts of a service provider towards meeting the needs and want of subscribers. The priority will also form the basis for the regulatory agency to effectively monitor the attributes that are of greatest importance to subscribers, as well as to determine the order in which to address the attributes.

Table 3
Composite priorities of the sub-criteria with regards to subscriber's preferences for quality of calls (QoS) of mobile network provider

Sub-criteria under Quality of calls	Calls Clarity (CC)	Call drop (CP)	Ease of Connectivity (CON)
Pooled Average Composite priority	0.591	0.097	0.312
Relative preference ranking	1	3	2

From Table 3, the pooled average composite priority of sub-criteria under quality of calls (QoS) revealed that subscribers preferred call clarity over ease of connectivity and call drop. Thus, mobile service operators should focus on clarity of calls first, closely followed by ease of connectivity, while minimising call drop.

Table 4
Composite priorities of the sub-criteria with regards to subscriber's preference for cheapness of tariff (T) of mobile network provider

Sub-criteria under Tariff	Cost per Call (CpC)	SMS per cost (SpC)	Internet services per cost (IpC)
Pooled Average Composite priority	0.486	0.172	0.342
Relative preference ranking	1	3	2

Table 4 reveals that subscribers preferred cheap call rate to cheap internet facility as a sub-criteria of tariff. Cost per call was mostly preferred, followed by internet services per cost and later SMS per cost. Service providers should ensure that the cost of calls is the cheapest option, as most subscribers in the low income group only use GSM to make calls. This is followed by the cost of internet facility and SMS, respectively. This suggests that subscribers preferred a cheap internet facility (an environment that is mostly academic based) to cheap SMS, but preferred cheap calls the most.

Table 5
Composite priorities of the sub-criteria with regards to subscriber's preference for coverage (C) of mobile network provider

Sub-criteria under Coverage	Wide (W)	Cities concentrated (CiCon)	Services out while on travelling (SOWT)
Pooled Average Composite priority	0.6348	0.3141	0.0511
Relative preference ranking	1	2	3

Table 5 shows that subscribers believe that wide coverage is good for their choice network. This is followed by cities concentrated network, and the least preferred which is a network provider that does not have coverage while the subscriber is traveling. Thus, wide coverage is important to customers in their choice of network.

Table 6
Composite priorities of the sub-criteria with regards to subscriber's preference for data plan (DP) of mobile network provider

Sub-criteria under Data Plan	Sufficient data with high costs (SDWC)	Insufficient data plan with low cost (IDPWLC)	Sufficient data plan but not effective (SDPBNE)
Pooled Average Composite priority	0.4315	0.5421	0.0264
Relative preference ranking	2	1	3

Table 6 displays the results of the pooled average composite priority and relative preference ranking of sub-criteria with regards to subscriber's preference for data plan as criteria for evaluating network attributes for determining which service providers to patronize. The results revealed that subscribers believe that an insufficient data plan with low cost was the most preferred among the sub-criteria of data plan, as sufficiency of the data plan ranked below this. Subscribers preferred a data plan that was insufficient with low cost, followed by a sufficient data plan with high cost while they least preferred a sufficient data plan that was not effective or productive (as this will consume time and effort without achieving what the users want to achieve).

Table 7
Composite priorities of the sub-criteria with regards to subscriber's preference for promotion (P) of mobile network provider

Sub-criteria under Promotion	Free data services (FDS)	Free SMS (FSMS)	Free calls (FC)
Pooled Average Composite priority	0.4913	0.0515	0.4572
Relative preference ranking	1	3	2

The above table shows subscribers preference for sub-criteria under promotion. The results revealed that subscribers preferred free data services more than free calls and free SMS. Subscribers preferred network providers providing more data services the most, followed by free calls, while the least preferred is free SMS. Thus, promotional services that give a data plan were preferred to free calls and SMS. This may be due to the fact that the majority of the respondents involved in the study were students who use internet services for many things such as voice/video calls, Whatsapp, BBM, Chat On, Google Plus, email, and so on.

Table 8
Composite priorities of the sub-criteria with regards to subscriber's preference for message delivery (MD) of mobile network provider

	Prompt delivery (PD)	Slow delivery (SD)	Poor delivery (PD)
Pooled Average Composite priority	0.8966	0.0856	0.0178
Relative preference ranking	1	2	3

Table 8 shows the results of subscriber's preference for the sub-criteria of message delivery in selecting a network of choice. It is evident from the results that subscribers preferred prompt delivery of short service message most, followed by slow delivery while they least preferred the poor delivery. Therefore, subscribers will always patronize a service provider that gets their messages across promptly over those that deliver late or have poor delivery.

Table 9
Composite priorities of the sub-criteria with regards to subscribers preference for complaint management (CM) of mobile network provider

	Response on time (ROT)	Respond late but effective (RLBE)	Network providers' agent do not respond (DNR)
Pooled Average Composite priority	0.4821	0.4821	0.0358
Relative preference ranking	1.5	1.5	3

Observations from Table 9 show that with regards to complaint management by a network provider, subscribers preferred timely responses and late but effective equally while they least preferred the network provider or agent not responding to their calls. This indicates that the time it takes to answer a call is irrelevant to subscribers as long as the response is effective. That is to say, subscribers prefer to achieve their purpose by getting a good response to a complaint or clarification of a question.

Table 10
Composite priorities of the alternatives with regard to subscriber's preference for quality of calls

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.2716	0.2566	0.2566	0.2152
Relative preference ranking	1	2.5	2.5	4

The pooled composite priority and relative preference ranking of alternatives to quality of calls revealed that from the experiences of services provided to subscribers as at the time of this study, MTN is mostly preferred , followed by Airtel and Glo who are preferred equally, while Etisalat is the least preferred with respect to quality of calls.

Table 11
Composite priorities of the alternatives with regard to subscriber's preference for cheap tariff

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.1568	0.4704	0.1299	0.2429
Relative preference ranking	3	1	4	2

Table 11 shows the pooled composite priority and relative preference ranking of alternatives to cheapness of tariff. It reveals that from experiences of services provided to subscribers at the time of the study, Airtel is the cheapest and most preferred, followed by Etisalat, MTN and Glo.

Table 12
Composite priorities of the alternatives with regard to subscriber's preference for network coverage

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.3931	0.2484	0.2761	0.0824
Relative preference ranking	1	3	2	4

Table 12 shows the relative preference ranking of subscribers among the players (operators) in the GSM market with respect to coverage. It reveals that subscribers believe that if coverage is their basis for decision making, their utmost preference is MTN with the widest coverage. Glo is the second most preferred followed by Airtel and then Etisalat.

Table 13
Composite priorities of the alternatives with regard to subscriber's preference for internet data plan

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.2457	0.2908	0.2310	0.2325
Relative preference ranking	2	1	4	3

Table 13 contains the relative preference ranking of subscribers, among the players (operators) in GSM market, with respect to data plan (internet facilities). It reveals that subscribers believe that if internet services are the basis for decision making, their utmost preference is for Airtel followed by MTN. Next Etisalat was preferred, and Glo was the least preferred with respect to data plan.

Table 14
Composite priorities of the alternatives with regard to subscribers' preference for frequent promotion

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.2177	0.2345	0.3133	0.2345
Relative preference ranking	4	2.5	1	2.5

Observations from Table 14 show that with regards to frequency of promotional activities of the network provider, subscribers believe that Glo is the most preferred, followed by Airtel and Etisalat who were equally preferred, while MTN is the least preferred.

Table 15
Composite priorities of the alternatives with regard to subscriber's preference for message delivery

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.2428	0.2571	0.2344	0.2657
Relative preference ranking	3	2	4	1

For preference of alternatives with respect to message delivery, subscribers preferred Etisalat as the most, followed by Airtel and MTN, while Glo was least preferred. Thus, if a decision on a network provider was based on message delivery, subscribers would prefer Etisalat, before Airtel, MTN and Glo.

Table 16
Composite priorities of the alternatives with regard to subscriber's preference for subscriber complaint management

	MTN	Airtel	Glo	Etisalat
Pooled Average Composite priority	0.2116	0.2133	0.2669	0.3082
Relative preference ranking	4	3	2	1

Among the four network providers currently in the GSM market in Nigeria, subscribers believed that Etisalat was the most preferred in the resolution of complaints or issues. This is followed by Glo, Airtel and MTN in that order. This is an indication that the least preferred network providers with respect to complaint management need to have more effective customer care centres.

5. Conclusion and recommendations

This paper illustrated the application of the AHP methodology in the evaluation of subscriber's preferences for mobile telecommunications network attributes in Nigeria, as well as the levels of services provided under each criteria and sub-criteria in a pair-wise comparison on the basis of Saaty's 9 point scale. From the data collected and analysed, mobile telecommunications attributes identified were: quality of calls, tariff, coverage, data plan, promotion, message delivery and complaint management.

Most of the subscribers preferred a quality network with low tariffs, a sufficient data plan that are more effective than the network provider having wider coverage. Thus AHP methodology helps to evaluate customer preferences for network attributes as well as preferences that subscribers have for the service providers with respect to each of the criteria. These criteria will ultimately inform their selection of a network provider. The results are a guide to stakeholders so as to ensure sustainable development in the Nigerian telecommunications industry. The study provides a basis for directing marketing efforts of the service providers towards meeting the telecommunications needs and wants of subscribers so as to reap better profits and retain profitable subscribers.

This study further corroborates Saaty's position (1994) that the Analytical Hierarchy Process (AHP) is the most recognized method of preference elicitation and the self-explicated approach (Sattler and Hensel-Börner, 2000). It is the easiest method to apply since it directly reverts to utility values and importance ratios and thereby increases the cognitive load of dealing with the different forms of uncertainty in more abstract terms (Hoeffler, 2003).

Based on the results of this study, the following recommendations are made:

- Service providers should improve service delivery on attribute(s) where they are least preferred by subscribers.
- Marketing efforts should be geared towards the criteria in order to achieve the goal, operators should focus on criteria in the following order: tariff, then quality of calls, then data plan, then promotion, followed by message delivery while complaint management and coverage could be vice versa.
- The regulatory agency should evaluate quality of service delivery based on needs indicated by subscribers, thus helping service providers to give what subscribers' want and not what they can give.

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