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Internet Usage by Nigerian Senior Secondary School Students: a Case Study of Ondo State

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Abstract

This study was designed to investigate Internet usage using factor analytic approach with principal factoring method. The principal objective of the study was to determine and identify how many latent constructs actually influence the internet usage, the underlying relationship between them. Data were collected from 336 senior secondary school students in some selected schools in Ondo State. A 31- item questionnaire was designed based on different purposes of internet usage. The questionnaire used Likert scale structured questions on internet usage; the questionnaire was validated and also confirmed reliable (Croubach Alpha 0.68). The findings of the study revealed that 21 factors constitute the dominant influence internal attributes on internet usage. There were underlying relationships among variables of each factor influencing the internet usage by Nigerian senior secondary school students. All the highly loaded variables on each factor showed a common feature, which led to the naming of each factor. Based on the findings, it was recommended that adequate attention should be paid on those 21 internal attributes that were identified.

1. Introduction

The dissemination of information and communication technologies (ICTs) in the society is yielding different kinds of transformations. The school environment, as a part of the social system is not beyond these transformations derived from the inclusion of the technologies. In fact, culture and society have to be adjusted to meet the challenges of the knowledge age; the pervasiveness of ICT has brought about rapid technologies, social, political and economic transformation, which has accentuate a network society organized around ICT. New information technologies involving a range of computer controlled communication services have evolved. Outstanding among these is the INTERNET (Shaba, 2005). According to Rotsztein (2003), the internet has experienced unprecedented growth in both size and number of users.

The internet provides several opportunities for the academia. It is a mechanism for information dissemination and a medium for collaborative interaction between individuals and their computers without regard for geographic limitation of space (Leiner et al., 2000; Singh, 2002). Content created on the internet ranges from simple e-mail messages to sophisticate 'documents' (sites) incorporating sounds, images and words. The internet is arguably one of the most significant technological developments of the late 20th century.

The vast information on the internet that covers almost all areas of human endeavour has made internet the greatest achievement of the century. It is fast becoming a necessity for every economy. The desire for both qualitative and quantitative education has multiplied the problems of providing an effective learning-teaching environment and most literature is directed at the Internet as a tool for educators. Among the internet using population, individuals ranging from 18-34 years of age represent the "most active online users" in the United States (Pastore, 2000). In view of this, secondary school students in particular represent a substantial part of this development. It is, however, unclear how African secondary schools students will respond to the

potentials of the Internet given the great difficulties they face as a result of reduced funding and severe pressures of lowering teacher/student ratios brought by "brain drain".

In education industry just like other sectors, Information Technology (IT) focuses on electronic generation, storage, retrieval, utilization and protection of information for future use while ICT revolves around different type of technologies likely going to be utilized for processing, transmitting or communicating information (World Bank, 2000).In the classroom situation, through interaction, it is an integral component of school curriculum activities since some of the curricular activities, task teacher/student undertake involves the use of communication skill both oral and written information. For instances, in all science subjects, students record their practical experiments, observations, demonstrations in both formal and informal text or present their findings/discovery in either oral or written reports.

2. Statement of the Problem

The study is aimed at finding out the pattern of usage of internet for various purposes. In attempt to achieve this, the study sought to factor analyse the responses of Nigerian Senior Secondary School Students on internet usage and to determine and know the essence of internet to the senior secondary schools students; determine the number of latent factors that can explain the observed relationships among the battery of tests on internet usage and examine these latent factors and their effects on the internet usage.

3. Research Questions

The following research questions are posited:

- What are the latent factors that account for observed relationships among the battery of tests on internet usage by senior secondary school students?
- What are the underlying relationships among the loaded variables on each latent factor that influence the internet usage by senior secondary school students?

4. Research Design

An ex-post-facto survey was adopted for the study. It involves the collection of data on internet usage by Nigerian senior secondary schools students in appropriate questionnaire. This design was used because there was no manipulation of independent variables.

5. Sample

The study sample consisted of senior secondary school students in Ondo State, Nigeria. Some secondary schools were selected at random and from those schools all the senior secondary school year two students (SSII) were enumerated. However, those who do not use internet were discarded. The sample consisted of 232 male students and 104 female students to make a total of 336 students.

6. Instrumentation

The only instrument used in the study was a Likert type questionnaire adapted from Owoyemi (2003). The questionnaire was divided into two sections: section A sought for personal information of the students (respondents) (locality, sex, class, age and if the respondent is an internet user?). Section B: was made up of 31 statements on the usage of internet relevant to the senior secondary school students. The frequency of usage is based on 5-point Likert scale in which the students were to indicate the extent of their agreement or disagreement with each of the statements. The instrument was pretested through a pilot survey using 20 students who are

internet users in a school within the state. The result of the pilot survey was analysed and showed no ambiguity or misinterpretation of the concepts. The final draft of the instrument was prepared.

7. Data Collection and Analysis

The data were collected through the administration of the questionnaire on the targeted students by the researcher. Names were not requested so that anonymity was maintained throughout the study and the questionnaire were collected back immediately from the respondents. Data collected were subjected to factor analysis utilizing principal components factor extraction and orthogonal rotation by the Varimax criterion (with Kaiser Normalization). Principal component's method of factoring was used while Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy was applied to test whether the partial correlations among variables are small. Bartlett's Test of Sphericity was carried out to confirm multicolinearity between the variables. It examined whether the correlation matrix is an identity matrix.

The principal components extracted were rotated to the terminal solution. Varimax criterion was applied so as to delineate the pattern of variation in the variables rather than among users. Absolute values of coefficients that are less than 0.300 were suppressed. Thus only factor loadings of 0.300 and above are assumed to be interpretable. This parameter sets the minimum total variance of 9% in a variable accounted for by a factor before the factor can be regarded as being important to the variable. The rotation converged in 41 iterations.

8. Results and Discussion

The table1 below shows the result of the extracted factors. Twenty one factors are extracted using principal component analysis. The factor accounted for 88.163% of the total variance. This implies that there are twenty one substantively meaningful uncorrelated pattern of relationship among the variables. Effectively, we say there are 21 different kinds of influence on the internet usage.

Factor 1 – Examination

The variables that load significantly high on this factor are mostly the variables that deal with examination, registration and relationship. Examination has a loading of 0.742. The common factor which produced the highest variance in the data set explained 30.196% of the total variance in usage pattern of the internet. Each of the variables that loaded on the factor has a correlation (r): $0.444 \leq r \leq 0.742$ with factor. This factor has dominant influence because the major focus of this group of students is the school certificate examinations such as West African Examination Council (WAEC), National Examination Council (NECO) and Joint Admission Matriculation Board (JAMB).

Factor 2 – Latest Fashion and Relationship

This factor accounted for 6.310% of the total variance explained. There are three variables that loaded significantly high on the factor. All the variables deal with Fashion and communication. The factor generated 81.3% of the variation in Fashion, 63.3% in relationship interaction and 44.4% in internet phoning. It has correlation (r): $0.444 \leq r \leq 0.813$ with the variables that loaded on it. That this factor is the second influential factor is not surprising because the students of this age bracket (13-18years) always crave for relationship and always want to be fashionable.

Factor 3 – Weather Information

Factor 3 accounted for 4.170% of the total variance explained. One of the variables deals with the Hotel reservation which has a correlation r = 0.671 with the factor and the other has 0.832 which deals with the Weather Forecast. At this stage of life individual students are very inquisitive about what goes on in their environment.

Factor 4 - Email

The variable that loads significantly high on this factor is the variable that deals with real time communication. It has loading of 0.744 and the other is 0.735 which is browsing for Aviation information and the variance of this factor is 4.123%. No wonder, Jagboro (2003) asserted that the era of wireless E-mail has become a seemingly indispensable part of people's lives, and correspondence by post seems tedious and slow by comparison. And because of the ability of e-mail in removing previous barriers of geography and distance by reducing some of the perceived burdens of the old paper and post systems, it is used almost incessantly.

Factor 5 – Current Affairs

This latent factor explained 4.043% of the variance in all battery of 31 tests. It has strong correlation of 0.828. Students of adolescent age are fond of watching Pornographic films and buying things online.

Factor 6 – Acquisition of Knowledge

The total variance explained by this factor is 3.531%. All the variables on the factor are concerned with browsing for knowledge, entertainment, all kinds of registration and Web development. Browsing for knowledge has a correlation of 0.704 with the factor while Entertainment, making registration and Web development are 0.548, 0.328 and 0.303 respectively. This in line with Jagboro (2003) who said that internet is a tool for acquiring knowledge.

Factor 7 – Communication and Information

This common factor explained 3.444% of the total variance in usage pattern of the internet. Each of the variables that load on the factor has a correlation r: $0.556 \leq r\ 0.632$ with the factor. The factors are concerned with Checking of account balances online, internet phoning and advertising on the internet.

Factor 8 – File Transfer

The variables that load significantly high on this factor are mostly the usages that deal with the Web development or real time communication. Web development has a loading of 0.570 and the FTP is 0.870.

Factor 9 – Online Library

This factor accounted for 3.074% of the total variance explained. There are two variables that load significantly high on the factor. All the variables deal with research and sport. The factor generated 76.7% of the variation in research work and 49.2% in collecting information on sports. The importance attached to online library is confirmed by Brabazon (2001) who asserted that "over the years, I've learned far more online about how things really work than I learned about how things should work in theory in six years of higher education as an undergraduate and graduate student." Hence cyberspace becomes the virtual library and the fount of all knowledge.

Factor 10 - Debates

There are four variables that load significantly high on the factor. All variables deal with the checking of the account balances online, watching pornographic films, learning and broadening knowledge and web development. The variables that loaded the factor have correlation r: $0.329 \leq r \leq 0.769$.

Factor 11 - Teleconferencing

The latent factor explained 2.738% of the total variance in all the battery of 31 tests. It has strong correlations r: 0.844 and 0.338 Teleconferencing and Advertising online.

Factor 12 - Scholarships

The latent factor accounted for 2.542% of the total variance explained. Two variables are responsible for these factors which load significantly high on the factor. The variables are seeking for Aids, Scholarships or Assistantships and watching sports. The correlations are 0.882 and 0.341 respectively.

Factor 13 – Online Purchase

This factor accounted for 2.468% of the total variance explained. The only variable responsible for this, is merchandising that is online purchase from shops. It has correlation of 0.895. This shows how frequent the students trade online. This in agreement with Zetter and Tweney (2003) who reported that of all the activities people love to do on the net, shopping ranks among the highest.

Factor 14 – Employment Opportunities

The total variance for this factor is 2.356% of the total variance explained. The variable on the factor is Seek for employment. The correlation is 0.874.

Factor 15 – Legal Consultation

The latent factor accounted for 2.193% of the total variance explained. There are two variables responsible for the factor which loads significantly high on the factor. The correlations are 0.302 and 0.850. The variables are Entertainment and Legal consultation. The use of internet for legal consultation is one of the prominent uses by professionals as reported by Ned (1995).

Table 1: Total Variance Explained for Internet Usage

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% Variance	Cumulative %	Total	% Variance	Cumulative %
1	9.361	30.196	30.196	1.667	5.379	5.379
2	1.956	6.310	36.506	1.637	5.281	10.660
3	1.293	4.170	40.676	1.561	5.034	15.694
4	1.278	4.123	44.799	1.558	5.027	20.721
5	1.253	4.043	48.842	1.504	4.852	25.574
6	1.095	3.531	52.374	1.401	4.520	30.094
7	1.068	3.444	55.817	1.369	4.415	34.509
8	.972	3.136	58.953	1.366	4.408	38.917
9	.953	3.074	62.027	1.289	4.159	43.076
10	.894	2.885	64.912	1.284	4.143	47.219
11	.849	2.738	67.650	1.259	4.063	51.282
12	.788	2.542	70.192	1.226	3.955	55.237
13	.765	2.468	72.660	1.210	3.903	59.139
14	.730	2.356	75.016	1.180	3.805	62.945
15	.680	2.193	77.209	1.169	3.770	66.715
16	.641	2.068	79.277	1.160	3.741	70.455
17	.618	1.992	81.269	1.148	3.702	74.157
18	.581	1.875	83.144	1.102	3.554	77.711
19	.544	1.754	84.898	1.089	3.514	81.225
20	.510	1.647	86.545	1.088	3.509	84.734
21	.502	1.619	88.163	1.063	3.429	88.163
22	.456	1.470	89.633			
23	.451	1.454	91.088			
24	.434	1.400	92.488			
25	.386	1.246	93.734			
26	.375	1.210	94.944			
27	.368	1.186	96.130			
28	.329	1.060	97.190			
29	.323	1.043	98.233			
30	.300	.967	99.200			
31	.248	.800	100.000			

Extraction Method: Principal Component Analysis.

The analysis of each of the 21 factors clusters of items proffers a recipe for naming the ɔrs. These clusters of items are given in Table 2 below.

Table 2: Clusters of Loadings for Internet Usage Profile

Factor	Loadings	Variables
1	0.444	Making friends online
	0.691	Online registration
	0.742	Taking Examination
2	0.391	Internet Phoning
	0.633	Making friends online
	0.813	Latest fashion in vogue
3	0.671	Hotel Bookings
	0.832	Weather Forecast
4	0.735	Browsing for Aviation information
5	0.744	Email
	0.649	Watching pornographic
	0.828	Reading News online
6	0.303	Web Design
	0.328	Making registration
	0.548	Entertainment
	0.704	Knowledge
7	0.556	Advertising on the Internet
	0.609	Internet Phoning
	0.632	Account Balances online
8	0.570	Web Development
	0.870	File Transfer Protocol (FTP)
9	0.492	Watching sports
	0.767	Use as library
10	0.329	Checking Balances online
	0.376	Watching Pornographic
	0.424	Web Development
	0.769	Debates
11	0.338	Advertising on the Internet
	0.844	Teleconferencing
12	0.341	Watching sports
	0.882	Seek for Aids and Scholarships
Factor	Loadings	Variables
13	0.895	Online Purchase from shops
14	0.874	Seek for Employment
15	0.302	Entertainment
	0.85	Legal consultation
16	0.312	Entertainment
	0.816	Health
17	0.813	Hacking for top secret information
18	0.83	Tourism
19	0.813	Religion
20	0.822	Admission
21	0.877	Retail

Factor 16 – Health Information

Entertainment and Health accounted for 2.068% of the total variance explained. This factor has correlation of 0.312 and 0.816 with Entertainment and Health respectively.

Factor 17 - Hacking

The total variance for this factor is 1.992% of the total variance explained. This variable that load significantly high on the factor is Hacking for top secret information. The correlation is 0.813. This finding confirmed by Inyiama and Nwodo (2002) who reported that Internet is a very powerful tool of brainwashing, monitoring and organizing effective attack against individuals or groups.

Factor 18 - Tourism

The total variance explained by this factor is 1.875%. The variable that load significantly high on the factor is Tourisms and the correlation is 0.830.

Factor 19 – Religious Information

The latent factor explained 1.754% of the total variance explained. The variable that load significantly high on the factor is religion. The correlation is 0.813.

Factor 20 - Admission

The factor explains 1.647% of the total variance in the usage profile. The only variable that load significantly high on the factor is schooling with high correlation of 0.822.

Factor 21 - Business

Factor 21 accounted for 1.619% of the total variance explained. This variable that load significantly high on the factor is seeking for information in retail stores. The correlation is 0.877. Zetter and Tweney (2003) reported that of all activities people love to do on the Net is business.

9.   Conclusion

The study revealed that twenty one factors determine and influence the usage of internet among senior secondary students. Out of these factors Examination, Latest Fashion and Relationship, Weather information and E-mail exhibit the greatest variability and individual differences. The variables that loaded on these factors are really the effective use of the internet. These factors and the rest need to be seriously focused if Nigerian students are to benefit from great opportunities that abound on the internet. The students are also found of using the internet for Current Affairs, Acquisition of Knowledge, Communication and Information to mention a few which reduces the stress of travelling and the risk involved.

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