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Behavioural Factors as Correlates of the Use of Information Communication Technology (ICT) in the Nigerian Army: The Case Study of Nigerian Army Signals Corps

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Abstract
Organizations have become increasingly dependent on technologically based information to support and drive operational, tactical and strategic business activities, thereby making information technology intrinsic in today's business enterprise. This study therefore evaluates the relationship between culture, educational attainment, social status and the use of Information Technology among personnel of the Nigerian Army. The significance of this study lies in the fact that apart from helping the rapid technological transformation of the army, the military personnel could still use such skill and contribute to the development of the wider society after disengaging from military service. Using the statistical instrument of chi-square, the study revealed a positive correlation between the use of ICT and the behavioural factors of education and social status. It is therefore recommended that the Nigerian Army will get the best out of its personnel by exploiting those behavioural factors in promoting the use of information technology. Therefore the army and the society will benefit immensely if army personal are provided with the opportunities to improve their education. The army should therefore encourage regular updating of knowledge by creating enabling environment for educational advancement through in-service training, seminars and workshops.

Keywords: ICT, educational attainment, culture, social status, Nigerian army signals

INTRODUCTION

The use of Information Communication Technology (ICT) in businesses and homes has moved to such an unimaginable level that more people are becoming familiar with its capabilities. Dippel (2000) confirmed the near indispensability of Information Communication Technology when he posited that the growth of the Internet has provided an almost limitless repository of knowledge and resources that are available to everybody with a computer and connection to the electronic world. Software has become both smarter and more complex, enabling users to perform tasks which previously they would not have been capable of doing. It is also common knowledge that the world's population including those of developing nations, who are believed to be technologically disadvantaged, is becoming more IT literate and friendly than ever before.

The matter of ICT use is made a lot easier as the technology is becoming cheaper and more readily available. Gone are the days when the purchase of sophisticated personal computers and other electronic gadgets were the exclusive preserve of the very rich and multi-national corporations and large business organizations. It is important to point out here that the mere possession and use of the computer is not synonymous with the ability to use ICT.

However, despite the huge advantages associated with the use of information communication technology, Dutton et al. (2004a, 2004b) highlight organizational and technological constraints on the diffusion of electronic courseware systems from the perspective of the social shaping of technology. Studies by Fulk, 1993; Fulk, Schmitz and Steinfield, 1990; Kling, 2000; and Williams and Edge, 1996 emphasize that the evolutionary path of the systems is not predetermined by the systems' technological inner logic or economic imperative, but is rather affected by social, organizational, economic, and cultural factors that surround the systems. The current security challenge in Nigeria has made the processing and management of information by the Nigerian Army more compelling. This study therefore evaluates the impact of identified behavioural factors of education, social status and culture in the use of Information Communication Technology in the Nigerian Army. The study has singled out the Nigerian Army Signal Corps for study because it is the Department of the Nigerian Army saddled with the provision of communication for the entire army. Modern warfare is becoming more sophisticated and information needs to be transmitted fast and accurately, if operational objectives are to be achieved.

STATEMENT OF PROBLEM

The basic problem of this study is to evaluate the impact of identified behavioural factors of culture, educational attainment and social status on the ability of military personnel to make effective use of Information Communication Technology devices in the execution of military tasks. More specifically, the study investigates how the identified behavioural factors influence the use of ICT among soldiers of the Nigerian army.

OBJECTIVE OF STUDY

The objectives of this study is to examine three identified behavioural factors of culture, educational attainment and social status with a view to ascertaining the implications of the identified factors on the use of Information communication technology devices by personnel of the Nigerian army. Current security threats all over the world heightened by unrelenting onslaught by terrorists have dictated the expansion of the security apparatus of each country. This has in turn increased the volume of information and communication needed to manage an increased human and material requirement. Consequently, the need for military personnel to keep abreast with modern communication skills cannot be over emphasized.

HYPOTHESES OF THIS STUDY

Ho_1: There is no significant relationship between cultural orientation and the use of ICT in the Nigerian Army

Ho_2: The level of educational attainment does not affect the use of ICT by personnel of the Nigerian Army

Ho_3: There is no significant correlation between social status of military personnel and the use of Information Communication Technology.

LITERATURE REVIEW

Information Communication Technology (ICT)

Information Communication Technology connotes different things to different people. Some people see it as just the computer, others equate it with the internet while a third group conceives it to mean a marriage of computers and computer based systems and communication.

Information and communication technology, usually called ICT, is often used as an extended synonym for Information Technology (IT), but is usually a more general term that stresses the role of a cohesive interaction process and the integration of telephone lines and wireless signals, intelligent building management systems and audio-visual systems in modern information technology (Wikipedia online). ICT consists of all technical means used to handle information and aid communication, including computer and network hardware, communication middleware as well as necessary software. In other words, ICT consists of IT as well as telephony, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions. The expression was first used in 1997 in a report by Dennis Stevenson to the United Kingdom (UK) government and promoted by the new National Curriculum documents for the UK in 2000.

Technically speaking, Information Communication Technology (ICT) covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form. Examples of these include but not limited to personal computers, digital television, email, and robots. Furthermore, it is also concerned with the way these different devices can work with each other.

As organizations struggle in hyper competitive environments that characterize business landscapes of today, information technology is often held up as the way to avail oneself of the promises and opportunities of the digital networked world (Sambamurthy, 2002).

In businesses generally, ICT computer based technologies are classified into two namely: The traditional computer-based technologies which include things you can typically do on a personal computer or using computers at home or at work. The second category refers to a more recent, and fast-growing range of digital communication technologies which allow people and organizations to communicate and share information digitally. The concern of this paper is the traditional Information Communication Technology.

Culture

Culture is a system of knowledge, of learned standards of perceiving, believing, evaluating and acting that are formed during childhood and reinforced throughout life (Viega et al. 2001; Shore and Vankatachalam, 1996). This implies that culture has a strong influence on all our undertakings including the way we make decisions about using IT (Hasan and Ditsa, 1999). A variety of frameworks for assessing cultural dimensions have been suggested by Hall ( ), Hofstede (1980), and Herbig (1994) among others. For the purpose of our study, we have examined the literature on culture and IT use in order to identify dimensions and determinants of culture that could be relevant to IT use by people.

The word culture has been subjected to different interpretations and meaning according to the various shades of opinions examining it. Thus, there are different definitions in sociology, cultural anthropology, cultural studies, media studies and social psychology (Frank Thomas et al., 2005).

For the purpose of this study, our working definition of culture is that which embraces behavioural patterns which are influenced by attitudes, beliefs, customs and social perception. Nigeria is multi ethno cultural entity and recruitment into the Nigerian Army is based on the geographical spread of the country thus enlarging the cultural connotations in the way and manner individual members of the army would approach his assignment. The different traditional beliefs and cultural orientation of military personnel could colour their attitude towards the use of Information Communication Technology. Beliefs and values are often difficult to do away with. For ease of absorption of new knowledge and innovations which ICT represents, the individual could be made to unlearn what has shaped his negative attitude towards the new innovation. Do soldiers' cultural beliefs influence their use of ICT?

Educational Attainment

Wikipedia defines educational attainment as the highest degree of education an individual has completed. It is the extent to which an individual has climbed in the pursuit of academic excellence. It is generally believed that the extent of an individual's level of education will determine the ease with which he can understand complex situations. Education is generally viewed to assist in helping the learner adjust to new situations within his environment. Therefore, the higher the educational attainment of an employee in an organization, the more he is better able to grasp and appropriate complex situations. The highly educated employee in an organization will more easily support the use of IT in a business entity. This is because he can appreciate the benefit which the introduction of IT might bring to the system.

Social Status

Social status is described as the position an individual attains in the social hierarchy. It is the honour and prestige attached to one's position in the society. Put in another way, it is the standing one holds in the society which is often determined by wealth, experiences, educational attainment, occupation. The question that is asked is how does one's social position affect the use of IT in an organization? The military is typically a ranked institution which demarcates between the officers and the men. The rank structure in the military dictates the social privilege enjoyed across the ranks. In the same vein, it is also possible that rank might be a compelling force in the acquisition of information communication technology skill.

TRADITIONAL USE OF ICT

Table 1: Traditional Use of ICT

APPLICATIONS	USES
Word processing	Microsoft Word: This is basic ICT computer package that is used in routine computer operations such as report writing, operational orders, letters and other forms of correspondence.
Spreadsheets	Microsoft Excel; Analyze financial information; calculations; create forecasting models. The ICT models here would be useful for the military arms of Finance, Engineering, Ordinance, Supply and Transport. The Ordinance dept of the military deals with stores and equipment, while the Transport unit handles vehicles and automobiles for the movement of troops and equipment during operations. Spreadsheets in a military setting would help solve the problem of inventory control and management
Database software	Oracle, Microsoft SQL Server, Access; Managing data in many forms, from basic lists. This package will be mostly useful in capturing basic personal identification of military personal including their family trees, units or formation.
Presentation software	Microsoft PowerPoint; make presentations, either directly using a computer screen or data projector. Publish in digital format via email or over the Internet. This type of package is suitable for giving out operational orders in the military.
Desktop publishing	Adobe In design, Quark Express, Microsoft Publisher ; This category of ICT technology could be useful in producing newsletters, magazines and other complex documents.
Graphics software	Adobe Photoshop and Illustrator; Macromedia Freehand and Fireworks; create and edit images such as logos, drawings or pictures for use in DTP, web sites or other publications
There are also specialized packages designed to perform specific functions. These include:	
Accounting package	The accounts package includes Peach Tree, Sage, Oracle; In the military, the accounts package are most suitable for pay roll preparation for active military personnel as well as for military pensioners. Prior to the widespread use of the computer in the Nigerian army, the issue of pensioners was becoming a national scandal as there was no accurate data to base the identification of military retirees. It was sad that more than twenty years after disengaging from active service, some retired soldiers could not be captured on the pay roll.
Computer Aided Design	Computer Aided Design (CAD) is the use of computers to assist the design process. Specialized CAD programs exist for many types of design: architectural, engineering, electronics, roadways. These packages will be ideal for Nigerian Army Engineering, the Nigerian Army signal corps as well as the Electrical and Mechanical Engineering department of the Nigerian Army.

ICT Use and Application in the Nigerian Army

The use of computer systems to store and process data is not by its own complete. The computer systems need to be linked to a network for communication and resource sharing. The low level of computer, internet usage and snail's speed diffusion of ICT into Nigerian Army Signals indicate the low level of ICT development in the Nigerian

Army generally. The development of ICT knowledge in the Nigerian Army Signals (NAS) started at the Automated Data Processing (ADP) Wing of the Nigerian Army School of Signals (NASS) in the late eighties. The Nigerian Army Signals, through the Wing commenced the training of personnel of all arms in computer literacy. As ICT knowledge advanced, the curriculum of the Wing which hitherto was limited to computer appreciation expanded to include training in software programming and networking applications. At present, the army can boast of an adequate pool of personnel to man the army network which would serve as the backbone of the Nigerian Army information technology infrastructure.

Currently, Nigerian Army Signal and the Directorate of Army Data Processing have succeeded in establishing the database of all officers and soldiers and it is in the process of computerizing the NA weapon records. The Directorate would also computerize store and equipment acquisition, training support, military operations and doctrine, research and combat development process.

Inspite of these achievements in the area of ICT development, it has been noted that the number of military personnel with just basic ICT knowledge is still a far cry from what is required. This means that a lot still needs to be done in terms creating an enabling environment that would motivate the acquisition of information technology knowledge skill. Sound educational background is thought to be a pre-requisite for the attainment of the required ICT skill. In the Nigerian Armed Forces, particularly the Nigerian Army, the level of literacy among the Non Commissioned Officers (NCOs) is generally low compared to officers' cadre. NAS has established an E-learning system in NASS and all the Divisional NAS schools by establishing e-library at Apapa and the Divisional schools. Student can now share information and have access to literatures easily.

METHODOLOGY

The philosophical assumption that guided this research is hinged on the application of a mixed method which deliberately combines the strength of both quantitative and qualitative model to investigate the behavioral factors in the use of ICT in the Nigerian Army (Creswell, 2005). The combined research method focuses on the collection, analysis of both quantitative and qualitative data in a single study or series of studies in order to better appreciate the phenomenon being studied (Creswell and Plano Clark, 2007). This study examined a sample of Nigerian Army Signal personnel (n= 255). The initial state of this investigation involves the development and administration of a 30 item questionnaire which covers the identified behavioural factors of culture, educational attainment and social status. The statistical tool of chi-square was used to analyse the outcome of the data collected. A total of 188 respondents completed and returned the questionnaire. The respondents were made up of 93 % males; 07 %females 23.5 %commissioned officers; 76.5 %non commissioned officers Secondary education 18 %; Post secondary education 53 %; University degree 18 %; Higher degree 11 %

RESULTS AND DISCUSSION

Hypothesis One: Relationship Between Culture and the Use of ICT

Table 2: Frequency Table on Culture and Ability to Use ICT

Segregation by cultural leaning	Able to use ICT independently	Can use ICT with assistance	Cannot use ICT at all	Total respondents
Hausa/Fulani	14	21	0	35
Igbo	14	52	0	66
Yoruba	34	60	0	94
Others	27	33	0	60
Total	89	166	0	255

Source: Field study - 2012

Table 3: Computation of Chi Square for Culture and ICT Usage

OBSERVED	EXPECTED	O-E	$(O-E)^2$	$(O-E)^2/E$
14	12.22	1.78	3.48	0.26
14	23.04	-9.04	81.64	3.54
34	32.81	1.19	1.42	0.04
27	20.94	6.06	36.71	1.75
21	22.78	-1.78	3.18	0.14
52	42.97	9.04	81.64	1.90
60	61.19	-1.19	1.42	0.02
33	39.06	-6.06	36.71	0.94
			Fcal	8.60
			Ftab	12.59

Source: Field study - 2012

Fcal <Ftab at P=0.05, so accept Ho and reject Hi

Table 4: Frequency Table of Responses on Culture and ICT use

	Agreed	**Disagreed**	**Total**
Hausa	21	14	35
Igbo	47	19	66
Yoruba	61	33	94
Others	40	20	60
Total	**169**	**86**	**255**

Source: Field study – 2012

Table 5: Computation of Chi Square Responses on Culture and ICT Usage

OBSERVED	**EXPECTED**	**O-E**	**$(O-E)^2$**	**$(O-E)^2/E$**
21	23.19	-2.20	4.82	0.21
47	43.74	3.26	0.62	0.24
61	62.30	-1.30	1.68	0.03
40	39.76	0.24	0.06	0.00
14	11.80	2.20	4.82	0.41
19	22.26	-3.26	10.62	0.48
33	31.70	1.30	1.68	0.05
20	20.24	-0.24	0.06	0.00
			Fcal	**1.42**
			Ftab	**12.59**

Source: Field study - 2012

Fcal <Ftab at P=0.05, so accept Ho and reject Hi
The tables above are divided into two categories. The first is the ability to use ICT, while the second is responses elicited from the respondents.

Hypothesis Two: Relationship between Educational Attainments on the Use of ICT

Table 6: Frequency Table on Educational Qualification and ICT Usage

	Ability to use ICT Independently	Ability to use ICT With assistance	Total respondents
WASSCE/GCE/ NABTECH	13	33	46
OND/NCE	35	100	135
HND/BSC/BA/B .ED	20	27	47
M.SC/MBA/ MA/M.ED	21	0	21
OTHERS	0	6	6
TOTAL	**89**	**166**	**255**

Source: Field study – 2012

Table 7: Computation of Chi Square for Educational Qualification and ICT Usage

OBSERVED	EXPECTED	O-E	$(O-E)^2$	$(O-E)^2/E$
34	38.97	-4.97	24.65	0.63
135	114.35	20.65	426.30	3.73
27	39.81	-12.81	164.14	4.12
14	17.79	-3.79	14.35	0.81
6	5.08	0.92	0.84	0.17
12	7.04	4.97	24.65	3.50
0	20.65	-20.65	426.30	20.65
20	7.19	12.81	164.14	22.83
7	3.21	3.79	14.35	4.47
0	0.92	-0.92	0.84	0.92
			Fcal	**61.83**
			Ftab	**9.49**

Source: Field study - 2012
Fcal >Ftab at P=0.05, reject Ho and accept Hi

Table 8: Frequency Table of Responses on Educational Qualification and ICT Usage

	Agreed	Disagreed	Total
WASSCE/GCE/NABTECH	34	12	46
OND/NCE	135	0	135
HND/BSC/BA/B.ED	27	20	47
M.SC/MBA/MA/M.ED	14	7	21
OTHERS	6	0	6
TOTAL	216	39	255

Source: Field study – 2012

Table 9: Computation of Chi Square Responses on Educational Qualification and ICT Usage

OBSERVED	EXPECTED	O-E	$(O-E)^2$	$(O-E)^2/E$
34	38.97	-4.97	24.65	0.63
135	114.35	20.65	426.30	3.73
27	39.81	-12.81	164.14	4.12
14	17.79	-3.79	14.35	0.81
6	5.08	0.92	0.84	0.17
12	7.04	4.97	24.65	3.50
0	20.65	-20.65	426.30	20.65
20	7.19	12.81	164.14	22.83
7	3.21	3.79	14.35	4.47
0	0.92	-0.92	0.84	0.92
Fcal				**61.83**
Ftab				**9.49**

Source: Field study - 2012

F cal >Ftab at P=0.05, reject Ho and accept Hi

Hypothesis Three: Relationship between Rank/Social Status and the Use of ICT

Table 10: Frequency table on rank/social status and ICT usage

	Independently	Assistance	Total
Commissioned officer(CO)	34	26	60
Senior non-co	14	20	34
Junior non-co	41	120	161
Total	89	166	255

Source: Field study - 2012

Table 11: Computation of Chi Square for Rank/Social Status and ICT Usage

OBSERVED	EXPECTED	O-E	$(O-E)^2$	$(O-E)^2/E$
34	20.94	13.06	170.53	8.14
14	11.87	2.13	4.55	0.38
41	56.19	-15.19	230.80	4.11
26	39.06	-13.06	170.53	4.37
20	22.13	-2.13	4.55	0.21
120	104.81	15.19	230.80	2.20
			Fcal	**19.41**
			Ftab	**5.99**

Source: Field study - 2012

Our computation of chi square test on the relationship between rank/social status and the use of ICT in the Nigerian army showed that there is a significant relationship between the two.

Table 12: Frequency Table of Responses on Rank/Social Status and ICT Usage

	Agreed	Disagreed	Total
Commissioned Officer (CO)	0	60	60
Senior Non-Co	20	14	34
Junior Non-Co	60	101	161
Total	80	175	255

Source: Field study – 2012

Table 13: Computation of Chi Square Responses on Rank/Social Status and ICT

OBSERVED	EXPECTED	O-E	$(O-E)^2$	$(O-E)^2/E$
0	18.82	-18.82	354.32	18.82
20	10.67	9.33	87.11	8.17
60	50.51	9.49	90.06	1.78
60	41.18	18.82	354.32	8.61
14	23.33	-9.33	87.11	3.73
101	110.49	-9.49	90.06	0.82
			Fcal	**41.93**
			Ftab	**5.99**

Source: Field study – 2012

LIMITATION OF THE STUDY

The study parameter was limited to a usable sample of 255 personnel of the Nigerian Army Signal Corps. A higher sample size could have been more representative of the military. Furthermore, this study may be limited by the fact that only three behavioural factors of educational attainment, culture and social

status were studied, other behavioural factors could have also influenced the soldiers' use of ICT.

CONCLUSION AND RECOMMENDATION

This study revealed a significant positive correlation between Information communication technology and the behavioural factors of educational attainment and social status. The study found no significant relationship between information communication technology and culture. This means that culture is not one of the variables that influence information communication technology in this study. As the use of ICT is increasingly become indispensable, the army like any other organization cannot isolate itself from the ICT revolution. This therefore necessitates the harnessing of those attributes found to enhance the development of ICT skills in military personnel. Thus it behoves, the military authorities to promote individual attributes that will assist its personnel in the use and mastery of ICT. This is more so now that the nation is passing through a lot of security challenges through the activities of terrorist organizations. A marriage of ICT devices and capable and efficient military army personnel is most desirable at this time. The Nigerian army must therefore take determined steps to promote ICT education. When situations warrant army personnel must be encouraged to improve their education standard which will in turn improve their ICT knowledge. The Nigerian Army authorities should equip the signal corps with modern and sophisticated ICT gadgets.

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