

THE IMPORTANCE OF NETWORK SYSTEMS IN OSUN STATE, (A CASE STUDY OF 4,800 BUSINESS CENTRE, IN DIFFERENT LOCATIONS, OF NIGERIA)

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ABSTRACT

This research work was carried out, to know the importance of Network Systems in Osun State. 4 Local governments, namely: (Ife East, Ife South, Ife Central and Ife North), local government areas were sampled. 4,800 open questionnaires were distributed to the 4 Local Governments, out of which 1,200 was used in each local government. A total of 48 different locations were visited and sampled in all the four Local Governments, out of which 100 questionnaires were used in each location. It was gathered that above 75% of the people supported, that network systems was important in Osun State, while less than 25% of the people could not even understand whether network systems was important or not. The results from the questionnaires when using Pearson one-tailed correlation coefficient, however revealed that there was no significant difference from all the business centre visited and sampled, ($p < 0.01$) table 5. This shows a strong positive correlation, which implying that, computer network systems is strongly influenced and enhanced people's support, from the four local government areas of Osun State Nigeria, and therefore had made the research work to become a reality, ($p < 0.01$) table 5. The reasons may be due to the fact that in public domain, computer network systems was not only aiding the sharing of information between libraries, government officers, police department, hospitals, practitioners and institution etc; but, it enabled an ease flowing and or the sharing of information and communication processes. Which enabled a combination of one-to-one, one-to-many, many-to-one, many-to-many communications, to established over the global networks. Histogram with curve was used to depict the summary data of each of the local government areas sampled in Ile – Ife of Osun State, Nigeria.

INTRODUCTION

The need to share information and resources among different computers had led to the linking of various computer systems called networks, in which computers are connected to that data, which can be transferred from machine to machine. These made possible, the availability of technological linkage and interconnectivity of networks to several computer electronic devices; (For example, storage, word processors, printers, the phone system etc.), had brought about ease flowing and or the sharing of information and communication processes. These enabled a combination of one-to-one, one-to-many, many-to-one, many-to-many communications, to established over the global networks. In public domain, computer network systems aid the sharing of information between libraries, government officers, police department, hospitals, practitioners and institution etc. Computer network systems also led to the emergency of new ideas, for managing organisation and assisted the exchange of information

business between people and institutions in one hand and the society at large. Computer network systems can be defined, as groups of two or more computer systems interconnected or linked together for the purpose of sharing the same resources, so that information and files can travel between the systems. Computer networking is the connectivity or interconnectivity of computer and communication system and their peripherals through hubs and satellite medium in such a way that they can see themselves and exchange information. There are many types of computer network systems, including the following:

(a). (WAN) WIDE - AREA NETWORK: That spans a large geographic area and often joins multiple local area networks (LANs) and/or metropolitan area networks (MANs). Here, the computer systems are farther apart and are connected by telephone lines, radio waves etc. The internet is the widest area networks in the world. WAN is a telecommunication network or computer network that extends a large geographical distance. WAN are often established with (leased communication circuits) business, education and government entities. This mode of communication allows a business to effectively carry out its daily function, regardless of any location. **VWANs** perform the reverse function for wide area networks. **VWAN** shape WAN architectures so that multiple WAN behave like a single network.

(b). (MAN) METROPOLITAN-AREA NETWORK: This is a data network designed for town or city (i.e. a network of intermediate size, such as one spanning a local community). MAN is a great computer network located on the large geographical area or region. MAN is a network bigger than local area network but territorially smaller than WAN. MAN combines local area networks located within a city, and is based on high data rate compounds implemented on the basis of fiber channels. MAN is a network of fiber optic cables that is intended to serve people, businesses and organisations in a city or large geographical areas. MAN diameter usually ranges from 5 to 50 kilometres. MAN usually includes several buildings or even the whole city (metropolis), based on high data rate compounds using fiber channels and other digital data transmission channels. MAN includes a lot of communicating devices, for its construction are often used multiple routers, switches and hubs which combined together several local area networks or campus area networks located in different buildings within a city and provided the internet connectivity for them.

(c). (CAN) CAMPUS- AREA NETWORK OR CORPORATE AREA NETWORK: This is a multiple interconnected local area networks (LAN) in a limited geographical area, such as a campus or military base. A CAN is smaller than a wide area network (WAN) or metropolitan area network (MAN). CAN

is a computer network made up of an interconnected LANs serving a corporation, government agency, university or similar organisation.

(d). (LAN) LOCAL-AREA NETWORK: This is where the computer systems are geographically closed together (that is, in the same building) or building complex. For example, computer on a university campus or those in a manufacturing plant might be connected by a LAN. **VLANs** performances on local area network (LAN), is where VLANs are designed to efficiently make use of LAN architecture so as to behave as if it is multiple networks.

(e). (SAN) STORAGE-AREA NETWORK: This basically connects the mass storage of a computer via a network. A SAN is having the disks connected via a network that is very common with the use of virtual servers.

(f). (PANS) PERSONAL-AREA NETWORKS: This is referred to the interconnection of information technology devices or any gadgets. PAN is used for data transmission amongst devices such as computers, telephone and personal digital assistants. PAN can be used for communication among the personal devices themselves, or for connecting to a higher level network and the internet where the master device takes up role as gateway. A PAN may be carried over wired computer buses such as USB. A wireless personal area network (**WPAN**) is a low powered PAN carried over a short distance wireless technology such as USB, Bluetooth, wireless etc.

(g). (NAN) NEAR-ME AREA-NETWORK: This is a communication network that focuses wireless communication among devices in close proximity. Unlike local area networks (LANs) where the devices are in the same network segment and share the same broadcast domain, the devices in a NAN can belong to different proprietary network infrastructures (for example, different mobile carriers). If two devices are geographically close, the communication path between them might, in-fact, traverse a long distance, going from LAN, through the internet and to another LAN. NAN applications focus on two way communications among devices within a certain proximity to each other but do not generally concerned themselves with the devices in exact locations.

(h). HAN-NETWORK OR HOME AREA NETWORK: This is a network that is deployed and operated within a small boundary typically a house or small office/home office. This contained within a user's home that connects a person's digital devices. HAN enables the communication and sharing of resources between computers mobile and other devices over a network connection.

(i). **A NANO-NETWORK OR MONOSCALE-NETWORK:** This is a set of interconnected Nano-machines (devices of a few hundred nanometres for a few micrometres at most in size), which are able to perform only very simple tasks such as computing, data storing, sensing and actuation. Nano-networks are expected to expand the capabilities of single Nano-machines both in terms of complexity and range of operation by allowing them to coordinate, share and fuse information. Nano-networks enable new applications of nanotechnology on the bio medical field, environmental research, military technology, and industrial and consumer goods applications.

(j). **(BODY AREA-NETWORK):** This is also referred to as a wireless body area network. **(WBAN)**, or body sensor network **(BSN)**, is a wireless network; wearable computing devices.

(k). **(NFC) NEAR-FIELD-NETWORK OR NEAR-FIELD COMMUNICATION:** This allows data to be exchanged between devices via short-range. They automatically initiate network communications without requiring the user to configure the setup. In addition to these types, the following characteristics are also used to categorized different types of networks:

TOPOLOGY: The geometric arrangement of a computer system. Common topologies include:

(i) **RING TOPOLOGY:** where there is no host computer or server and a number of computers (workstation) or other devices, but are connected in a ring or loop version. All computer messages are passed around the ring until they reach the desired / connected destination. One advantage of this network is that it share network fairly.

(ii) **BUS TOPOLOGY:** The computers on this network are connected to a backbone cable segment to form a straight line which is a cable connecting all computers in a straight line. Here each device in the network handles its own communication control. There is no host computer. All communication travel along a common connection cable called a bus.

(iii) **STAR TOPOLOGY:** Here, a number of small computer systems (work station) or peripheral devices are linked to a central unit. The central unit may host computers on file server.

PROTOCOL: The protocol defines a common set of rules and signals that computers on network, was using to communicate. One of the most popular protocols for LAN is called Ethernet.

STUDY AREA

The study has been conducted in Osun State of Nigeria. Osun State is an inland State in South-western Nigeria. Its capital is Osogbo. It has a population of 3.4 million and of 9,251 km² in Area. It is bounded in the North by Ekiti State and partly by Ondo State, in the South by Ogun State and in the West by Oyo State.



“Figure, showing the Study Area Map of Osun State of Nigeria”,

MATERIAL AND METHODS

The responses of the people in different locations of the four local government areas can be seen from the decision table as below:

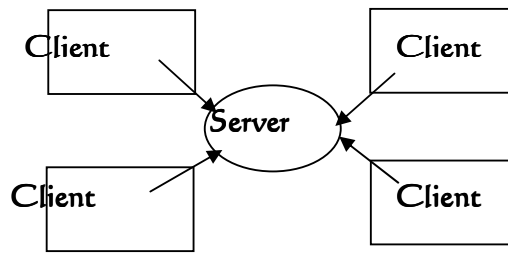
“Table 1 showing the Decision Table”,

Sub	Above 75%	Below 25%	Open headed Questionnaires
Computer network systems as a catalyst to effective public governance	X		
I do not know		X	
State open questionnaires			X

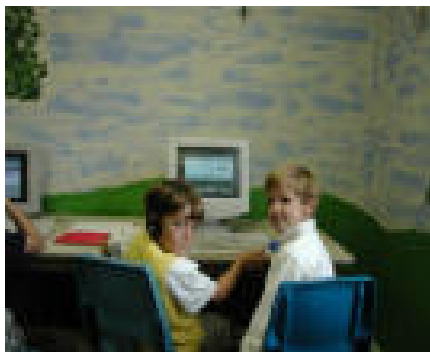
The below are the points ticked by the majority of the people (above 75% table 1) from the questionnaires who understood the importance of network systems in Osun State

[a] THE CLIENT / SERVER MODEL: In network systems, server must be prepared to serve multiple clients at a time.

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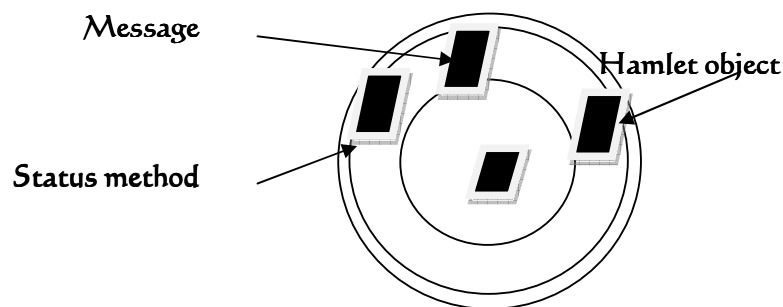


[b]. **A COMMITMENT TO LEARNING:** Computer network systems enable computer users to keep abreast of the latest developments in information technology, thereby making them to be most successful whenever there are changes in technology.



[c]. **MESSAGES:** In network systems, objects also communicate, by sending and receiving messages. In close conjunction with client-server terminology, the object initiating the message is called the client, where, as the target object is referred to as the server. When an object receives a message, it responds by executing one of its methods.

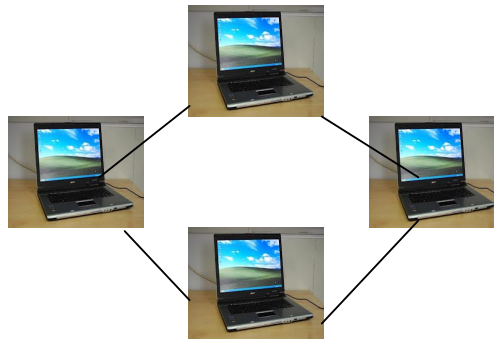
“Diagram below showing examples of Message sending (simple messages involve only the recipient and the message name. More complex messages may have additional arguments or parameters and may return a value)”,



[d]. **DATA SHARING:** Computer network systems can make one computer site to obtain access to data held on the site or maintain same, at some other sites.



[e] **IN RING TOPOLOGY:** Computer network systems made all messages possible to pass from workstations, and other devices connected, to shared network fairly.

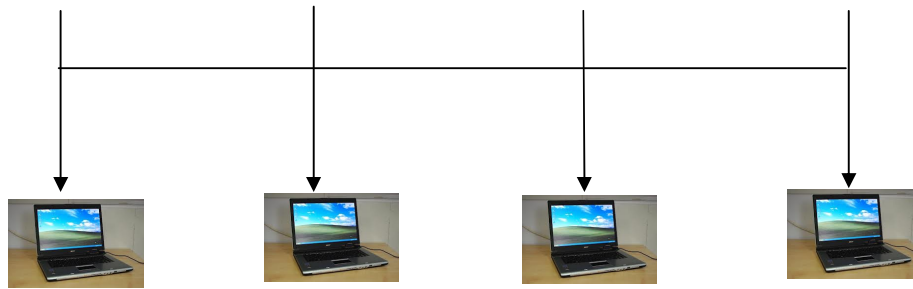


[f] **WORK DISTRIBUTION:** Within one application system, some operations in computer network systems can be readily performed locally and pre-processed data transmitted to other sites responsible for other functions.



[g] **INBUS TOPOLOGY:** All communication in computer network systems, travel along a common connection cable.

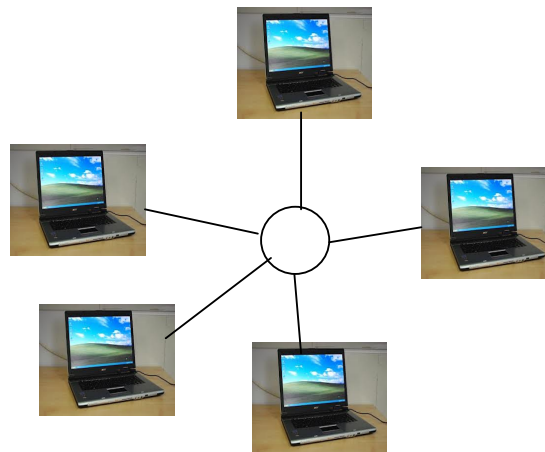
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[h] **FUNCTION SHARING:** Computer network systems enable some sites to use facilities (e.g. some application programs) available at one site or the other.



[i] **IN STAR TOPOLOGY:** In computer network systems, central unit may host computer on file server.

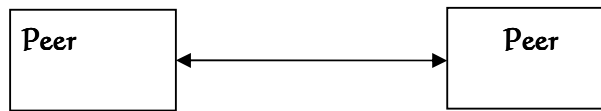


[j] **THE VARIOUS CHANGES IN TECHNOLOGY:** Network system makes computer users to know the latest developments in information and changes in technology.

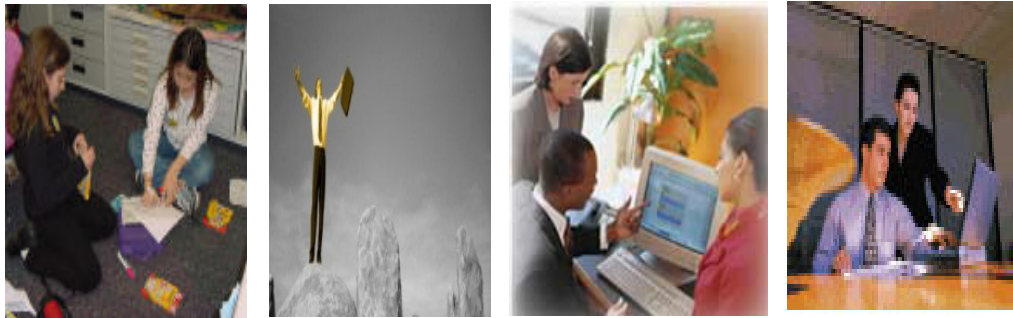
“Picture 4 below showing examples of information and changes in technology”,



[k] In Peers Network systems, communication as equals on a one-to-one basis.

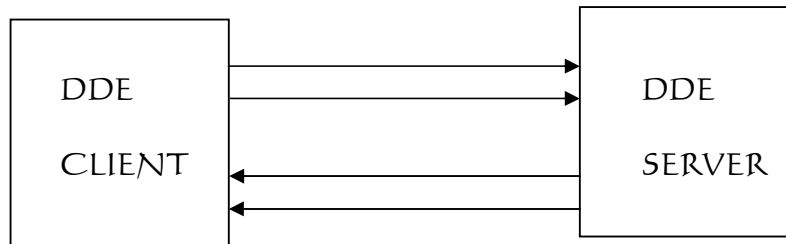


[l] Computer network systems may change the way a company works internally and with other partners.



[m]. **CONVERSATION IN DYNAMIC DATA EXCHANGE (DDE):**
 It can be Asynchronous where conversation (the more common method), the client sends a request and wait until the server responds or Synchronous conversation, the client sends a request and to server; if none is received within a time – out period, an error situation arises as below:

“Diagram 8 below showing examples of conversation in dynamic data exchange (DDE)”,



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[n]. Computer network systems can enable employee to work more closely beyond the organisational boundaries, to share knowledge systematically and to link with outside partners.



[o] **AN ATTENTION TO DETAIL AND ABILITY TO LEARN OR MEMORIZE PROGRAMMING LANGUAGES:** Computer network systems enable personnel/students to pay close attention to detail, to ensure that everything works correctly and efficiently. It also makes computer Professionals to know many programming languages and how to use a wide variety of computer software program, because a great memory helps a lots by keeping work efficiently.



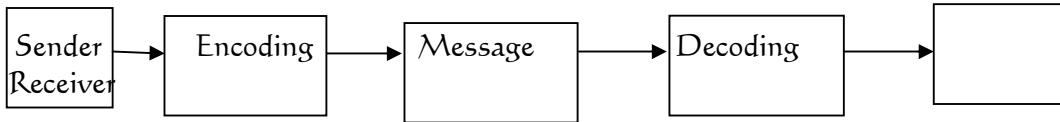
[p] **PERFOMANCE:** Computer network systems enable an application system to utilise several computers simultaneously, thereby increasing the performance of the system, in term of throughput and response time.



[q] **RADIO NETWORK SYSTEMS** was made possible, in which with the aid of a transmitter and a receiver, both equipped with an antenna, the signals are

decoded in information which can be easily understood by the individuals for them to respond accordingly.

“Diagram below showing example of Radio Network systems”,



[k] **RELIABILITY:** In network systems, while using several computers, the effects of a breakdown of one or more computer components can be reduced.



RESULT AND DISCUSSION

Questionnaires were distributed to 4 Local government areas that is, (Ife East, Ife South, Ife Central and Ife North). The results from the questionnaires however revealed that the importance of network systems in Osun State, are manifold: There was no significant difference on the people in all the local government areas visited, (p < 0.01).

“Table 2 showing people’s respondent”,

Wards	Ife East		Ife South		Ife Central		Ife North	
People’s Response	Network was Important	I do not know	Network was Important	I do not know	Network was Important	I do not know	Network was Important	I do not know
	841, 70.1%	359, 29.9%	829, 69.1%	371, 30.9%	831, 69.3%	369, 30.7%	822, 68.5%	378, 31.5%

From the above table 2, in Ife East, there are 841 people’s response with 70.1%, Ife South, 829 with 69.1%, Ife Central, 822 with 68.5%, and Ife North, 480 with 68.6% , were those People who supported the importance of network systems in Osun State, while in Ife East, 359 with 29.9%, Ife South, 371 with 30.9%, Ife Central, 369 with 30.7%, and Ife North, 378 with 31.5%, respectively could not even know whether there was an importance or not.

"Table 3 below showing the different locations and local governments",

LOCAL GOVERNMENT	LOCATION	IFE EAST		IFE SOUTH		IFE CENTRAL		IFE NORTH	
Peoples Respondent	A	74	26	70	30	68	32	67	33
	B	72	28	65	35	67	33	68	32
	C	64	36	76	24	75	25	72	28
	D	63	37	64	36	64	36	63	37
	E	71	29	68	32	75	25	68	32
	F	77	23	72	28	73	27	79	21
	G	69	31	79	21	78	22	74	26
	H	75	25	64	36	62	38	65	35
	I	62	38	60	40	59	41	62	38
	J	72	28	70	30	69	31	70	30
	K	68	32	69	31	70	30	64	36
	L	74	26	72	28	71	29	70	30
TOTAL =	12	841	359	829	371	831	369	822	378
Grand Total =	12	1,200		1,200		1,200		1,200	

Table 3 above, showing the summary data collected, from the 4 Local Governments sampled, out of which 1,200 were used in each local government.

"Table 4 showing the descriptive statistics",

Descriptive Statistics

	Mean	Std. Deviation	N
IFEEAST	70.0833	4.94439	12
IFESOUTH	69.0833	5.36755	12
IFECENTRAL	69.2500	5.65886	12
IFENORTH	68.5000	4.90825	12

Correlations

"Table 5 showing the Pearson Correlation of the 4 local governments",

Correlations

		IFE EAST	IFE SOUTH	IFE CENTRAL	IFE NORTH
IFEEAST	Pearson Correlation	1	.205	.217	.489
	Sig. (1-tailed)		.261	.249	.053
	N	12	12	12	12
IFESOUTH	Pearson Correlation	.205	1	.900**	.764**
	Sig. (1-tailed)	.261		.000	.002
	N	12	12	12	12
IFECENTRAL	Pearson Correlation	.217	.900**	1	.745**
	Sig. (1-tailed)	.249	.000		.003
	N	12	12	12	12
IFENORTH	Pearson Correlation	.489	.764**	.745**	1
	Sig. (1-tailed)	.053	.002	.003	
	N	12	12	12	12

Correlation is significant at the 0.01 level (1-tailed).

“Table 6 below, showing the Frequency Table of (Ife East, Ife South, Ife Central, and Ife North)”, Statistics

		IFE EAST	IFE SOUTH	IFE CENTRAL	IFE NORTH
N	Valid	12	12	12	12
	Missing	0	0	0	0

Frequencies Variables=IFEEAST IFESOUTH IFECENTRAL IFENORTH

NTILES=4

NTILES=10

Statistics=STDDEV VARIANCE RANGE MINIMUM MAXIMUM

SEMEAN MEAN MEDIAN MODE SUM SKEWNESS SESKEW

Kurtosis Sekurt

Grouped=IFEEAST IFESOUTH IFECENTRAL IFENORTH

HISTOGRAM NORMAL

Order=ANALYSIS

“Table 7 below, showing the mean, mode std. deviation of the 4 local government areas”, Statistics

		IFEEAST	IFESOUTH	IFECENTRAL	IFENORTH
N	Valid	12	12	12	12
	Missing	0	0	0	0
Mean		70.0833	69.0833	69.2500	68.5000
Std. Error of Mean		1.42732	1.54948	1.63357	1.41689
Median		71.3333 ^a	69.3333 ^a	69.5000 ^a	68.0000 ^a
Mode		72.00 ^b	64.00 ^b	75.00	68.00 ^b
Std. Deviation		4.94439	5.36755	5.65886	4.90825
Variance		24.447	28.811	32.023	24.091
Skewness		-.482	.195	-.305	.733
Std. Error of Skewness		.637	.637	.637	.637
Kurtosis		-.989	-.136	-.523	-.445
Std. Error of Kurtosis		1.232	1.232	1.232	1.232
Range		15.00	19.00	19.00	17.00
Minimum		62.00	60.00	59.00	62.00
Maximum		77.00	79.00	78.00	79.00
Sum		841.00	829.00	831.00	822.00
Percentiles	10	62.7000 ^c	61.8667 ^c	61.1000 ^c	62.7000 ^c
	20	63.9000	64.2667	63.8000	63.9000
	25	66.0000	64.6667	65.5000	64.5000
	30	68.1000	65.3000	67.1000	65.2000
	40	69.6000	68.3000	68.3000	67.2000
	50	71.3333	69.3333	69.5000	68.0000
	60	72.2000	70.2000	70.7000	69.2000
	70	73.4000	71.4000	72.8000	70.5333
	75	74.0000	72.0000	73.6667	71.3333
	80	74.4000	73.6000	74.4667	72.2000
	90	75.6000	76.9000	76.6000	75.5000

a. Calculated from grouped data.

b. Multiple modes exist. The smallest value is shown

c. Percentiles are calculated from grouped data.

Tables (8, 9, 10, and 11) showing the frequency Tables for (Ife East, Ife South, Ife Central and Ife North).

"Table 8 below, showing valid and cumulative percentages of Ife East",
IFE EAST

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	62.00	1	8.3	8.3	8.3
	63.00	1	8.3	8.3	16.7
	64.00	1	8.3	8.3	25.0
	68.00	1	8.3	8.3	33.3
	69.00	1	8.3	8.3	41.7
	71.00	1	8.3	8.3	50.0
	72.00	2	16.7	16.7	66.7
	74.00	2	16.7	16.7	83.3
	75.00	1	8.3	8.3	91.7
	77.00	1	8.3	8.3	100.0
Total		12	100.0	100.0	

"Table 9 below, showing valid and cumulative percentages of Ife South",

IFE SOUTH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	60.00	1	8.3	8.3	8.3
	64.00	2	16.7	16.7	25.0
	65.00	1	8.3	8.3	33.3
	68.00	1	8.3	8.3	41.7
	69.00	1	8.3	8.3	50.0
	70.00	2	16.7	16.7	66.7
	72.00	2	16.7	16.7	83.3
	76.00	1	8.3	8.3	91.7
	79.00	1	8.3	8.3	100.0
Total		12	100.0	100.0	

"Table 10 below, showing valid and cumulative percentages of Ife Central",

IFE CENTRAL

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	59.00	1	8.3	8.3	8.3
	62.00	1	8.3	8.3	16.7
	64.00	1	8.3	8.3	25.0
	67.00	1	8.3	8.3	33.3
	68.00	1	8.3	8.3	41.7
	69.00	1	8.3	8.3	50.0
	70.00	1	8.3	8.3	58.3
	71.00	1	8.3	8.3	66.7
	73.00	1	8.3	8.3	75.0
	75.00	2	16.7	16.7	91.7
	78.00	1	8.3	8.3	100.0
Total		12	100.0	100.0	

"Table 11 below, showing valid and cumulative percentages of Ife North",

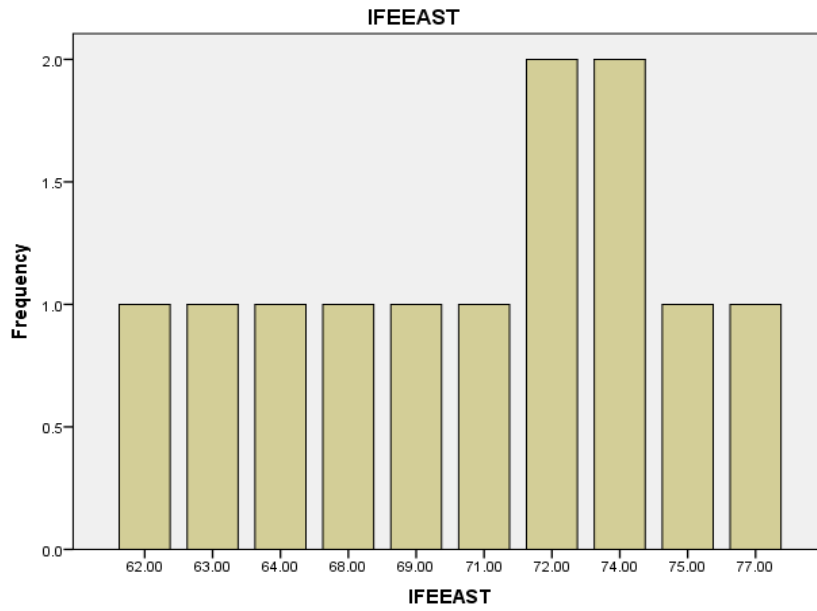
IFENORTH

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	62.00	1	8.3	8.3	8.3
	63.00	1	8.3	8.3	16.7
	64.00	1	8.3	8.3	25.0
	65.00	1	8.3	8.3	33.3
	67.00	1	8.3	8.3	41.7
	68.00	2	16.7	16.7	58.3
	70.00	2	16.7	16.7	75.0
	72.00	1	8.3	8.3	83.3
	74.00	1	8.3	8.3	91.7
	79.00	1	8.3	8.3	100.0
Total		12	100.0	100.0	

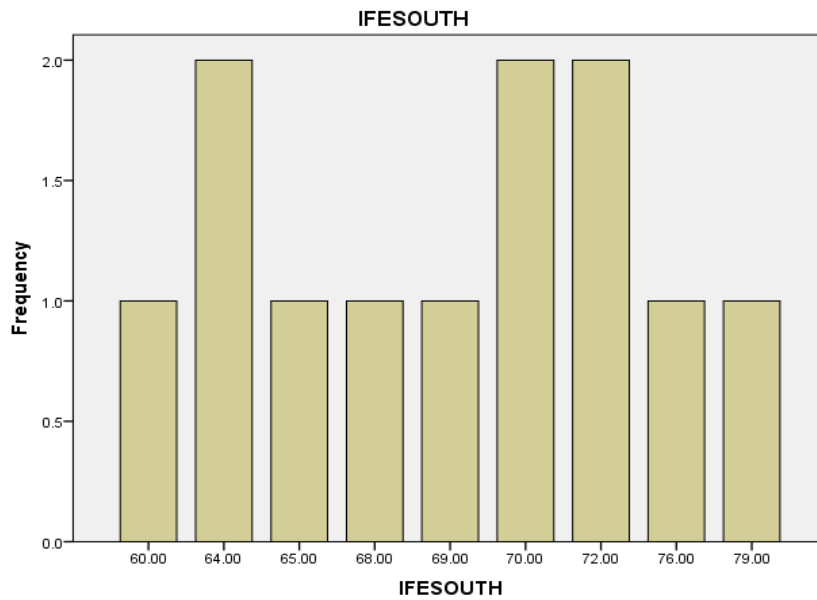
Figures: (2, 3, 4, and 5) showing the Histogram with Curve, for (Ife East, Ife South, Ife Central and Ife North)

Histogram

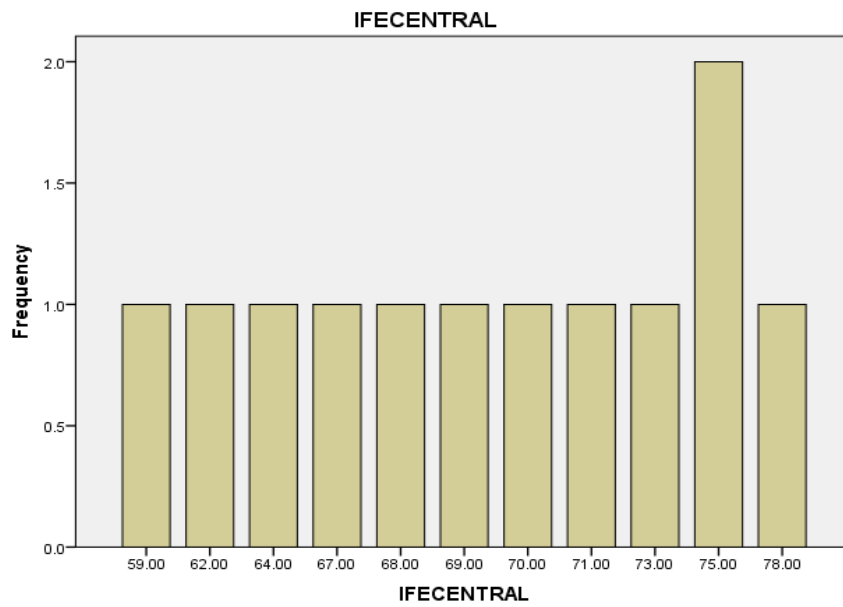
“Figure 2 showing the histogram of Ife East”,



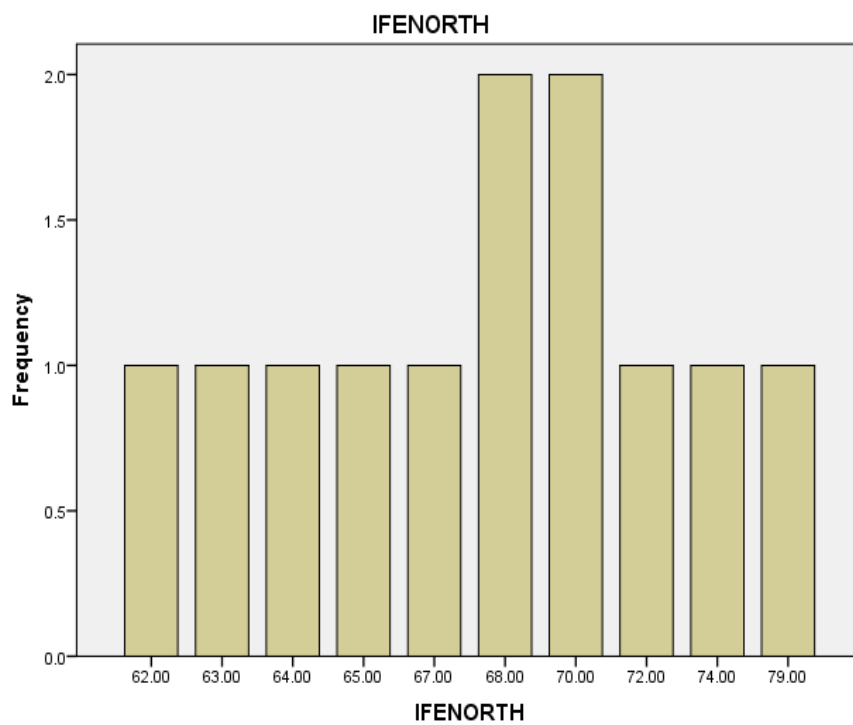
“Figure 3 showing the histogram of Ife South”,



“Figure 4 showing the histogram of Ife Central”



“Figure 5 showing the histogram of Ife North”



RECOMMENDATIONS

1. Adult computer awareness training should be made possible and effective in all the local governments, in both rural and urban areas of Osun State, Nigeria, to enable computer network systems users, have good knowledge on Internet technology.
2. Computer workshops should be encouraged in Osun State, to enable business centres users, attain their utmost standard.
3. All Business centres users, should make sure that the computer systems essential files, should always be turned to read only, and remember to change the write protect of the disk after use.
4. All computer users should endeavour to undergo computer training in order to enable him / her man any computer system.
5. The environment of the business centre's users should always be clean, neat and free from dust.
6. All computer users should be extremely cautious while opening emails with attachments because the most common source of symptoms of computer virus is the attachments that accompany emails,.

CONCLUSION

The following conclusions are made based on the findings of this study. Since computer network systems had led to the emergency of new ideas, for managing organisation and assisted the exchange of information and also in public domain, computer network systems was not only aiding the sharing of information between libraries, government officers, police department, hospitals, practitioners and institution etc; but, it enabled an ease flowing and or the sharing of information and communication processes. Which enabled a combination of one-to-one, one-to-many, many-to-one, many-to-many communications, and business, between people and institutions, to established over the global networks; the results of this study provide the empirical evidence that the importance of network systems had enhanced people's achievement in Osun State in general and Nigeria societies at large. The society therefore should use the computer network systems technique to argument peoples' maximal output in businesses, in order to attain minimum goal needed for everybody in the society.

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