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The Effect of Using Concept Mapping in Teaching Physics on Academic Achievement of the First Year Students in Oman

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Abstract

The aim of this study was to investigate the effect of using concept mapping strategy in teaching physics on the academic achievement. Participants were (46) first year students from two classes enrolled to course "Fundamentals of Physics I" in Dhofar University. One of the classes was randomly selected as experimental group (23) students and the other was control group (23) students. Data were collected via the pre- and post – of the physics test. The study conducted in 8 weeks in a class met three times a week. The material covered was about mechanics. Results showed that there were no significant differences at ($\alpha = 0.05$) in the academic achievement between the experimental and control group. Also the study showed that there were no significant differences attributed to the interaction between teaching methods and gender.

Keywords: Concept Mapping, Academic Achievement, Teaching Physics.

1 Introduction:

Students that are at the school level or even at the university level believe that Physics is a challenge of a special type. Physics instructors also have the same viewpoint. They said that teaching Physics requires special skills and more effective approaches. There are many difficulties in teaching Physics, but making students aware of the overall picture of a set of concepts and the links between them might be the most important one.

Conceptual maps are effective tools in knowledge representation; they are important tools to make learning visible, spectators and meaningful both for the person himself and to others. Meaningful learning occurs when learners can connect new knowledge with something they already know (Zaitoon, 2001).

Concept mapping is an instructional tool that is currently gaining popularity in the field of science education. It is a product of recent advances in cognitive science and the new philosophy of science. Contemporary perspectives of- cognitive psychologists and the new philosophers of science on cognition view learning as an active internal process of construction where the learner's prior knowledge plays a significant role in further conceptual learning (Ausubel, 1963; Ausubel, Novak and Hanesian, 1978).

The hierarchical attribute of a concept map also makes meaningful learning proceed more easily as new concepts or concept meanings are subsumed under broader, more inclusive concepts (Novak & Gowin, 1984).

1.1 Study Questions

1. What is the effect of using concept mapping in teaching physics on the academic achievement of the first year students in Dhofar University?
2. What is the effect of gender on the academic achievement of the first year students in Dhofar University?
3. What is the effect of the interaction between concept mapping strategy and gender on the academic achievement of the first year students in Dhofar University?

1.2 Purpose of the Study

The main purpose of the study is to investigate the effect of using concept mapping in teaching physics on the academic achievement of the first year students in Dhofar University

1.3 Study Hypotheses

1) There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement of the first year students in Dhofar University attributed to using concept mapping in teaching physics.
2) There is no statistically significant difference at ($\alpha = 0.05$)in the academic achievement of the first year students in Dhofar University attributed to the gender of the students.
3) There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement attributed to the interaction between concept mapping strategy and gender of the first year students in Dhofar University.

1.4 Study Limitations

The generalization of the findings of this study will be limited by:

- Sample of the first year students in Dhofar University.

- The first four chapters of Physics textbook (Serway, 8th edition)
- The validity and reliability of instruments used in the study.

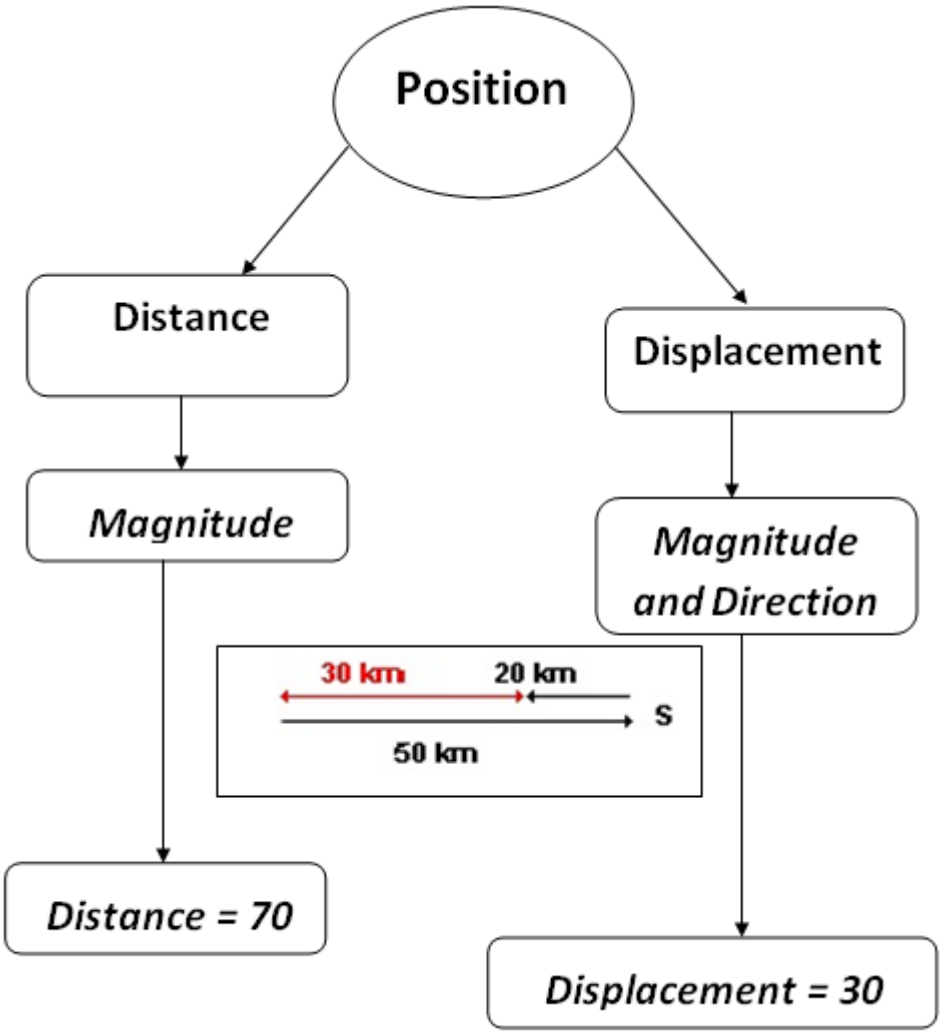
1.5 Operational Definitions of Study's Terminology

Concepts mapping as teaching strategy: It's a strategy based on identifying concepts then introducing the concepts as a network structure, in order to aid learning and understanding, sections of a given concept map can be regarded as hierarchical tree-like structures. This is the approach that is adopted in this study. When a concept map is organized in a hierarchical fashion, the more general and more inclusive concepts should be at the top of the map, with progressively more specific (and less inclusive concepts) arranged below them (Novak & Gowin, 1984).

Concept mapping strategy involves the following systemic steps:

(i). Identifying the major components of the concept.
(ii). Arranging the concept's components in hierarchical order
(iii). Linking the components with linking phrases
(iv). Making cross links with directed lines

The following is a sample of the concept maps presented in the study:



Academic achievement: It is the outcome that the student can access to while achieving the educational goal, and it is measured by the test prepared by the researcher.

2. Theoretical Literature and Related Studies

This section deals with two parts, the first one relates to the educational literature of concept mapping, while the second part involves some related studies.

2.1 Theoretical Literature

2.1.1 Concept mapping:

The main aim of science education and teaching is to teach the essence of science with concepts as its fundamental stones. At the same time, in our heavily teacher centered traditional educational system, the passiveness of students while acquiring information, heavy load of the curriculum to be covered in a short time, and providing only verbal definitions of concepts creates a learning environment which based on rote learning. Science education literature has countless studies showing that students have conceptual errors even after a formal education (Wandersee et al,1994). Cognitive and behavioral theories tried to explain the phenomenon of learning.

Behavioral learning theories sustained their impact until the end of 1960s; however as they focused only on observable behavior, lost their supremacy and gave in to cognitive theories of learning from 1970'ies of as they remained insufficient in identifying important and complicated scientific processes such as perception, problem solving, attention, personality, and memory.

According to cognitive scientist, learning is a cognitive procedure and occurs only if a learner makes sense of the information cognized. This cognition changes in line with learner experiences, culture, the nature of the interaction, and the role of the student in this process (Zaitoon, 1999).

Concept maps were first suggested by Joseph Novak, who has studied the education field as an aid for learners to increase understanding (Richardson 2005). The strategy was born out of the constructivist theory of learning which holds that the learner constructs or builds his own know-ledge as opposed to the previous one (Basso and Margarita 2004).

Ausbels advocates the use of the advanced organizer which is based on the idea that the teacher is given a short description to the new material before the lesson to prepare the student to accept the new material (Reece and Walker 2003).

Concept mapping is a teaching and learning strategy that establishes a bridge between how people learn knowledge and sensible learning. Students need to have sufficient foundation and a critical thinking about concept mapping and the relations between different concepts. Concept mapping promises to be useful in enhancing meaningful learning and students' conceptual understanding in Science and Physics (Novak and Gowin, 1984).

Novak and Canas (2006) see that concept maps are graphical tools for organizing and representing knowledge. They include concepts closed in circles or boxes of some types and relationships between concepts indicated by connecting or linking two concepts or words on the line, referred to as linking words or linking phrase.

The advantages of the concept maps are:-

1. Concept maps can be used as advanced organizer to improve learner's achievement (Kommers 2004) .
2. Provide teachers with a meaningful and practical structured approach
3. Aid the development of deep meaningful teaching moving towards critical thinking rather than surface approaches
4. Concept maps also allow students to reflect their own misunderstanding and take ownership of their learning (Fitzgeraled 2006).
5. Organize their thoughts and visualize the relationships between the key concepts in a semantic way .

Concept mapping method was developed for learners to show what they already know and become aware of the cognitive structure (Novak & Gowin, 1984). Concept maps help students understand propositions and concepts more clearly, make connection between old and new knowledge, and develop a cognitive structure in their minds (Arnaudin et al, 1984).

2.2 Previous related studies

Akay. S, Kaya. B, and Kilic. S (2012) conducted a study aimed to support, enrich, and broaden the process of education using concept maps and to determine the effects of concept maps in biology classes on school success, attitude and retention of the knowledge taught.. At the end of the study, a statistically significant difference ($p<.05$) between emerged traditional teaching method and using concept map while teaching. The data also indicated that the cognitive support of the concept maps had a positive impact on students' achievement and retention of knowledge. The data furthermore indicated that students have a positive attitude for concept maps.

Akeju, O. O. Simpson, Rotimi, C. O and Kenni, A. M (2011) conducted a study aimed to investigate the effects of teaching with Concept Mapping instructional strategy on learning achievement in Nigeria Secondary Schools.. The research study revealed that: - Concept Mapping Instructional strategy contributed to learning achievement in physics; there is significant effect of treatment on students' retention of learned materials; there is significant effect in students' learning attitude. Result established that the instructional strategy when integrated with any method of instruction resulted in improved learning achievement.

Karakuyu. Y (2010) conducted a study aimed to investigate the effect of students' concept mapping on their physics achievement and attitudes toward physics lesson.. Results showed that while there were no significant differences in the attitude and achievement between the experimental and control groups.

However, the experimental group students were observed to have a tendency of more positive attitude than the control group students. Results also showed that drawing concept map instruction was more effective than traditional instruction in improving physics achievement of the participating students.

Chei-Chang Chiou (2008) conducted a study aimed to examine whether concept mapping can be used to

help students to improve their learning achievement and interests. The experimental data revealed two important results. First, adopting a concept mapping strategy can significantly improve students' learning achievement compared to using a traditional expository teaching method. Second, most of the students were satisfied with using concept mapping in an advanced accounting course. They indicated that concept mapping can help them to understand, integrate and clarify accounting concepts and also enhance their interests in learning accounting. They also thought that concept mapping could be usefully used in other curriculum areas.

BouJaoude. S and Attieh. M (2007) conducted a study aimed to examine (1) whether or not the construction of concept maps by students improves their achievement and ability to solve higher order questions in chemistry, (2) investigate the differential effect of the treatment by gender and achievement level, and (3) explore the relationships between performance on concept maps and chemistry achievement.. Results showed that while there were no significant differences on the achievement total score, there were significant differences favoring the experimental group for scores on the knowledge level questions. Moreover, there were sex-achievement interactions at the knowledge and comprehension level questions favoring females and achievement level – achievement interactions favoring low achievers. Finally, there were significant correlations between students' scores on high level questions and the convergence and total concept map scores.

3. Methodology

This chapter describes the method and procedures that were followed in this study. It includes a description of study sample, instruments, and procedures for validity and reliability. Also it deals with a description of the design, and the statistical treatments used in data analysis.

3.1 The study sample:

The sample of this study consisted of (46) first year students from two classes enrolled to course "Fundamentals of Physics I" in Dhofar University. One of the classes was randomly selected as experimental group (23) students and the other was control group (23) students. Both groups are taught by the same teacher.

Table 1. The distribution of participants according to gender and groups.

	Control group		Experimental group		Total
Gender	N	(%)	n	(%)	
Male	10	43	16	70	26
Female	13	57	7	30	20
Total	23	50	23	50	46

n: number of participants in groups; %: percentage of participants in groups.

3.2 Study Instruments: The following instruments were used in this study :

3.2.1 Concept maps: Based on the topic "Mechanics" The first four chapters of Physics textbook (Serway, 8th edition).

3.2.2 Achievement test:

The dependent variable in this study is the students' physics academic achievement; the test was used to measure the students' achievement at the end of the study.

To check the validity, three curricula and instructional faculty members were asked to check the validity items. After handing the teat back, their notes were studied and the alterations were made for some paragraphs. Based on their suggestions, some items were modified. Using Cooper equation, the degree of agreement was found (85%). Darwaza (1997) indicated that the degree of agreement is acceptable if the coefficients exceeded (75%).

Reliability coefficient was calculated for the test using the Corder - Richardson (K, R - 20) equation and found (0.89). The test consisted of 11 paragraphs in its final form after it was 15. It was given one mark for correct answer and zero mark for the wrong answer, so that the maximum score for the test (11), while the minimum is 0.

3.3 Study Design and Variables:

3.1 Independent variables:

- Teaching methods and includes two levels (Concept mapping and Traditional Method).
- Gender and includes two levels (Female and Male).

3.2 Dependent variable :

- Academic Achievement.

A factorial design with two treatments (CRF_{2x2}) has been used. The following table illustrates this design:

Teaching Method / Gender	Concept Mapping	Traditional Method
Female	G1	G2
Male	G3	G4

G_1 : Females group taught by concept mapping

G_2 : Females group taught by traditional method

G_3 : Males group taught by concept mapping

G_4 : Males group taught by traditional method :

3.3 Study Design

G1	X1	O1	O2
G2	X2	O1	O2
G3	X3	O1	O2
G4	X4	O1	O2

O_1: Performance on the pre test of academic achievement**.**

O_2: Performance on the post test of academic achievement**.**

X_1: Experimental treatment for the 1st group (Female-Concept mapping).

X_2: Experimental treatment for the 2nd group (Female-Traditional method).

X_3: Experimental treatment for the 3rd group (Male-Concept mapping).

X_4: Experimental treatment for the 4th group (Male-Traditional method).

3.4 Statistical Treatment**:** Data analyses were carried out using means, standard deviations, and Analysis of variance (ANOVA).

3.5 Treatment: This study was conducted over a 24 lecture hours. The experimental (Concept mapping) and control (traditional) groups were pre-tested. The study was extended over eight weeks. The class met three times per week. The material covered was Mechanics which involves physics and measurements, dimensional analysis, significant figures, motion in one dimension, motion diagram, freely falling objects, vectors, coordinate systems, motion in two dimensions, projectile motion, and uniform circular motion. At the end of the treatment period, the students were post-tested.

4. Results

4.1 Pretest

Based on the data obtained by the pre test, the students' mean and standard deviation for pretest scores for experimental and control groups were shown in Table 2.The mean score of the pretest for the experimental group was found to be (1.956), while that of the control group was found to be (2.043) out of a maximum possible score of 11.

Table 2. Means and standard deviations for the results of pre test prior to treatment.

Experimental and Control	Male and Female	Mean	Std. Deviation	N
experimental	male	2.3636	1.68954	16
	female	1.5833	.90034	7
	Total	1.9565	1.36443	23
control	male	2.0909	.83121	10
	female	2.0000	1.12815	13
	Total	2.0435	.97600	23
Total	male	2.2273	1.30683	26
	female	1.7917	1.02062	20
	Total	2.0000	1.17379	46

According to the pre test of academic achievement, there is a convergence of the values in the mean of the male - experimental group (2.3636) and male-control group (2.0909). But there is a considerable variation in the mean of the female-experimental group (1.5833) and female-control group (2.0000).

To find out whether the difference of the achievement in the pre test is statistically significant, an analysis of variance has been associated (ANOVA). Table (3) shows the results of this analysis.

Table (3) analysis of variance **(Two Way ANOVA)**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3.629(a)	3	1.210	.870	.464
Intercept	185.395	1	185.395	133.398	.000
Group	.059	1	.059	.043	.837
Gender	2.178	1	2.178	1.567	.218
Group * Gender	1.364	1	1.364	.981	.328
Error	58.371	42	1.390		
Total	246.000	46			
Corrected Total	62.000	45			

Table (3) shows that there was no significant difference between the two groups ($F = 0.837$, $p > 0.05$) in the achievement of the pre test. Also Table (3) showed that there was no

significant difference in the achievement of the pre test attributed to the gender (F = 0. 218, p > 0.05). Because there is no significant difference between the two groups, it is assumed that the two groups are equivalent.

4.2 Post test

The main purpose of the study is to investigate the effect of using concept mapping in teaching physics on the academic achievement of the first year students in Dhofar University.

4.2.1 First Question: What is the effect of using concept mapping in teaching physics on the academic achievement of the first year student in Dhofar University?

The following hypothesis emerged from this question:

There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement of the first year student in Dhofar University attributed to using concept mapping in teaching physics.

To answer this question the means and standard deviations was obtained and explained in table (4).

Table (4). Means and standard deviations for the results of post test after the treatment.

Experimental and Control	Male and Female	Mean	Std. Deviation	N
Experimental	Male	8.9375	1.48183	16
	Female	8.5714	1.61835	7
	Total	8.8261	1.49703	23
Control	Male	7.7000	2.00278	10
	Female	8.2308	1.87767	13
	Total	8.0000	1.90693	23
Total	Male	8.4615	1.77157	26
	Female	8.3500	1.75544	20
	Total	8.4130	1.74580	46

According to the post test of scientific thinking skills, there is a considerable variation in the mean of the male-experimental group (8.9375) and male-control group (7.7000). But there is a convergence of the values in the mean of the female-experimental group of (8.5714) and female-control group (8.2308).

To find out whether these differences of academic achievement in the post test are statistically significant, an analysis of variance has been associated (ANOVA). Table (5) shows the results of this analysis.

Table (5) analysis of variance **(Two Way ANOVA)**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.093(a)	3	3.364	1.112	.355
Intercept	2925.114	1	2925.114	966.908	.000
Group	6.515	1	6.515	2.154	.150

Gender	.071	1	.071	.023	.879
Group * Gender	2.104	1	2.104	.695	.409
Error	127.059	42	3.025		
Total	3393.000	46			
Corrected Total	137.152	45			

Table (5) explains that there is no statistically significant difference at a level ($\alpha = 0.05$), where the value concerning the effect of using concept mapping in teaching physics on the academic achievement is (0.150). The result means that the first null hypothesis is accepted, which states that : There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement of the first year students in Dhofar University attributed to using concept mapping in teaching physics.

4.2.2 Second Question:

What is the effect of gender on the academic achievement of the first year students in Dhofar University?

The following hypothesis emerged from this question:

There is no statistically significant difference at ($\alpha = 0.05$)in the academic achievement of the first year students in Dhofar University attributed to the gender of the students.

Table (5) explains that there is no statistically significant difference at a level ($\alpha = 0.05$), where the value concerning the effect of gender on the academic achievement of the post test is (0.879). The result means that the second null hypothesis is accepted, which states that: There is no statistically significant difference at ($\alpha = 0.05$)in the academic achievement of the first year student in Dhofar University attributed to the gender of the students.

4.2.3 Third Question:

What is the effect of the interaction between concept mapping strategy and gender on the academic achievement of the first year students in Dhofar University?

The following hypothesis emerged from this question:

There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement attributed to the interaction between concept mapping strategy and gender of the first year students in Dhofar University.

Table (5) shows that there is no statistically significant difference at a level ($\alpha = 0.05$), where the value concerning the interaction between concept mapping strategy and gender on the academic achievement is (0.409). The result means that the third null hypothesis is accepted, which states that: There is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement attributed to the interaction between concept mapping strategy and gender of the first year student in Dhofar University.

5. Discussion and Recommendations

5.1 Discussion

The main question of this study was: What is the effect of using concept mapping in teaching physics on the academic achievement of the first year students in Dhofar University.

The results in Table (5) showed that there is no statistical significant difference at ($\alpha = 0.05$) on the academic achievement attributed to using concept mapping or gender in teaching physics. Also there is no statistically significant difference at ($\alpha = 0.05$) in the academic achievement attributed to the interaction between concept mapping strategy and gender. This result might be attributed to the following:

Using concept maps as teaching strategy was expected to result in higher achievement in physics.

This expectation was based on the assumption that using concept maps helps in organizing information, fostering metacognition, and engaging students in building their knowledge structures. Results showed that the mean score of the physics achievement post-test for the experimental group exceeded that of the control group; however the difference was not statistically significant.

There are some factors which may participate negatively to this result. One of these factors is the test itself. The test measures the academic achievement in physics not the physical concepts acquisition. All the questions in the test need many mathematical skills plus the sufficient knowledge, besides many mathematical operations, and the probability to make mistakes is high in each process. The researchers think that the result would be much better if the test was measuring the physical concepts acquisition (which should measure the individual's ability to configure coherent format of the basic and secondary concepts and to give a clear perception of the physical concepts in terms of definition, characteristics and distinguishing them from other concepts besides the relations between them. Also it should reflect the degree to which the individual digest the new knowledge).

However BouJaoude and Attieh (2008) found that there was an effect by concept mapping as study tools on achievement in chemistry lectures. In that study results showed that while there were no significant differences on the achievement total score, there were significant differences favoring the experimental group for scores on the knowledge level's questions.

5.2 Recommendation

In the light of the findings, the study recommended the instructor to use concept mapping as teaching strategy to help students in constructing and altering their own knowledge structures, with the understanding that there is a need to help students become more engaged in using the technique because of its possible benefits. More research should be conducted to test further the effect of concept mapping as a study tool or homework.

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Distribution Pattern and Customers' Accessibility to Banks in Ibadan North Local Government Area of Oyo State, Nigeria

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Abstract

Banks among several reasons are meant to solve money deposits and withdrawals access of customers within the duration of banking. But despite, the importance of banks to the daily lives of man, they are not evenly distributed to meet the rising demands of depositors and withdrawals resulting in undue trips to access near or far away banks. The aim of the study was to examine the locational efficiency of banks and their accessibility to customers in Ibadan North Local Government Area, Oyo State. Data were obtained through the use of point data with the aid of global positioning system (GPS) and administration of one hundred and fifty copies of a structured questionnaire to customers at banking premises. Result of Nearest Neighbour analysis showed that banks in Ibadan Metropolis were unevenly distributed and customers travelled some distance as well as incurred cost of ₦20- ₦50 naira to access their respective banks. Banks were clustered in relation to commercial centres, Federal and State government institutions. Pearson's correlation result implied that population did not influence the location of banks as the location of banks was based on service and administrative factors. First bank and Wema bank were the most encountered banks, while Afribank, Access Bank, Diamond Bank, Bank PHB, Zenith Bank constituted the least encountered banks. The study suggests that more banks should be built in area where they are insufficient to reduce travel distance and cost.

Keywords: Locational Pattern, Banks, Ibadan North Local Government Area, Service & Commercial Centres, Nearest Neighbour Analysis, GIS

Introduction

Globally, banks are established to solve the daily problem of cash withdrawals, deposits and fund transfer among other services. For instance, the e-transacts service initiated by banks, make it possible for customers to transfer fund from one account to the other as well as send money to their loved ones with ease. The advent of Automated Teller Machines (ATMs) have helped to ease customers' problem of money withdrawals, fund transfer and voucher recharge for cell phones. The use of ATMs enables customers from whichever bank to withdrawal money at any time and place. Isa and Yusuf (2011) opined that ATMs can enable depositors from whichever bank to withdraw cash at more convenient times and places than during banking hours thereby reducing the costs of servicing some depositor demands. However, the withdrawals of ATMs in public places following Central Bank of Nigeria directive except in banking premises has caused problems to customers who sometimes have to travel some distance to make use of their banks vis-à-vis ATMs. This is so as some customers prefer to use ATMs owned by their banks, as such, they find it difficult to pay the charge for making use of other banks ATMs. Such people do not mind to travel some distance to nearby bank to make use of the ATM. With the influx of banks into the Nigerian banking system, it is worthy to say that some banks are not evenly distributed to meet the rising demands of cash depositors and withdrawals of their customers thereby, resulting in undue trips to access near or far away banks. In some areas, banks of depositors are found at close range, while in some other areas, they are not easily found. In most cases, the few available ones are normally overcrowded resulting in long queues and time wasting.

Phenomena like banks, settlements, plants and industries among others are known to be distributed in space in relation to certain favourable or unfavourable factors, as such, information on the spatial distribution of service is essential to understand access and utilization. Economists and Geographers have over the years dealt with the problem of efficient location of economic activities. According to Aweto (2001), geographers try to find answers as to why phenomena are located where they are and to elucidate the factors responsible for the pattern of their distribution in space. The common assertion is that phenomenon tends to cluster in areas where the existing conditions are favourable to its operation or survivals in terms of making profit. Thus, the understanding of access to services or facilities cannot be obtained without studying the spatial distribution of such service or facility. Facility efficiency has been the issue of discussion for years, and many proponents have called for services to be located in an area based on need and equity and not on mere population (Okafor, 2008). With the recently growth in banks and the daily desire of the banks to efficiently provide services to their customers in order to meet up with the high competitive banking environment, it becomes more important to measure the efficiency of financial institutions in terms of the spatial spread of their banks. This is because financial institutions that operate more efficiently, might expect improved profitability and a greater amount of intermediated funds mostly from ATM users of other banks (Berger, et al., 1993).The spatial pattern of banks has caused location inconvenience which has made large number of society to travel a long distance before customers could use their bank. The spatial distribution of banks can be ascertained using different techniques.

In the literature, a wide variety of methods and indicators used for characterizing the spatial patterns of economic units and activities are reported; however, there is no consensuses on which of them are more appropriate (Guillain and Le Gallo, 2007; Rangel and Lobato, 2010). But in recent times, the advent of Geographic Information System (GIS) has made image capturing modeling and processing as well as analysis easier. Ifatimehin (2005) opined that GIS based analysis helps in understanding the potentials and efficiency of service delivery

of infrastructure to the populace. GIS is a computer-based information system that enables environmental attributes to be captured and presented using geographically referenced data (Ferreira, 2005). GIS is at the intersection of many disciplines (Ufuah, 2006) and according to Heywood et al., (2001) is a problem-solving tool capable of handling various management and decision-making tasks with ease. In Nigeria, the few studies carried out on the spatial distribution of banks give particular emphasis on the distribution pattern of a single bank (Ifatimehin et al., 2008), while others only examine the benefits and challenges of the evolving trend in the banking system (Bello, 2005; Imala, 2005; Fasan, 2007; Olatokon and Igbinedion, 2009; Okafor and Ezeani, 2012). Others looked at the negative aspect of the invention in terms of fraud (Adeoti, 2011). However, the spatial location of banks as it affects customers' accessibility and utilization as well as assessing customer's perception of the location of their banks is not well documented in the literature. It is against this backdrop that the present study attempts to examine the locational pattern of banks in Ibadan Metropolis. The aim was to examine the distribution pattern and customers' accessibility to banks in Ibadan North Local Government Area of Oyo State, Nigeria. In this study the location efficiency and factors responsible for location efficacy of banks are investigated.

Materials and methods

Study area

Ibadan is the capital city of Oyo State and the third largest city in Nigeria by population after Lagos and Port Harcourt according to the 2006 Nigerian Population Census. It is located in south-western Nigeria, 128 km inland northeast of Lagos and 530 km southwest of Abuja, the federal capital and is a prominent transit point between the coastal region and the areas to the north. Its population is 1,338,659 according to the 2006 National Population Census. Ibadan had been the centre of administration of the old Western Region since the days of the British colonial rule, and parts of the city's ancient protective walls still stand to this day. The principal inhabitants of the city are the Yoruba people. Ibadan has twelve local government areas but this study was based on one of the local government area which is Ibadan North Local Government Area. Ibadan North Local Government was fcreated by the federal military government of Nigeria on 27th September 1991. The Local Government was carved out of the defunct Ibadan Municipal Council along with others. The Headquarters of the Local Government is Bodija. As a result of accommodation problems, the Local Government Headquarters is temporarily accommodated at Quarter 87 at Government Reserved Area at Agodi where the secretariat is located. The local government is located within Lat $7^0$22' and 7^0 27'N and long 3^0 53'E and 3^0 57'E. The area extent of the local government is approximately 80.35sqkm with a population of 306,795 people (2006 population census) and also percentage of area of 16.45. The local government consists of multi-ethnic nationalities predominantly dominated by the Yoruba's, Igbos, Edos, Urhobos, Itsekiris, Ijaws, Hausas, Fulani's and other languages as well as foreigners who are from Europe, America, Asia and other parts of the world.

Types and sources of data

The following set of data were used for the study: population data, data on bank location, data on Ibadan North boundaries, data on road network, data on accessibility and ward data. The above sets of data were sourced using different approaches. Data on accessibility was acquired through the administration of questionnaire. The questionnaire used distance, cost and time as indicators to measure accessibility. Data on population size of Ibadan North Local Government were obtained from National Population Commission; data on accessibility were obtained through the administration of questionnaire to customers in the banking premises; data

on the locational distribution of banks were generated through the use of point data with the aid of global positioning system (GPS).The geographical location of Banks were obtained using Universal Transverse Mercator (UTM) with aid of Garmin GPS 76S. In addition, softcopy maps of Nigeria, Oyo State and Ibadan Metropolis were obtained from GIS Laboratory, Department of Geography, University of Ibadan. Wards data were sourced from Independence National Electoral Commission (INEC) Office; data on Ibadan North Boundaries were obtained from information Unit at Ibadan North Local Government Secretariat, while road network data were derived from satellite images. The road network was digitized to produce road network data.

Choice of hardware and software tools

The choice of any GIS hardware or software depends on the scope of study. Different softwares are used for different functions and the hardware capability is depended on the volume of data to be used. The hardware used during the study was hand held Garmin GPSMAP 76S, 14 inches monitor of laptop with 504MB of RAM and A4 printer. One important consideration made in the selection of software was to consider software that would capture, store, retrieve, manipulate, analyze and display spatial data and attribute information on maps used and created .Two kind of ESRI softwares such as ARCVIEW 3.3 and ARCGIS 9.2 with the network analyst, spatial analyst, spatial statistics tool and 3D analyst extension were used for the analysis of spatial data and map making.

Sampling technique

This study made use of the purposive and accidental sampling technique. The purposive sampling technique was used to basically study the locational efficiency of bank in Ibadan north local government area; this location was chosen because it was where majority of banks were located. On the other hand, the accidental sampling technique was used to administer copies of the structured questionnaire to customers at the banking premises. The questionnaire was administered to customers across the seventeen banks in the area, with First and Wema banks having more of the questionnaire due to their spread. Customers were approached at the gate entrance (exit point), and only customers leaving the bank after transaction were administered copies of the structured questionnaire. A total of 150 copies of questionnaire were administered.

Method of data analysis

Data obtained from the processes above were analysed using table, simple percentage graphs, averages, Pearson correlation, bivariate regression and quadrant count analysis. Relative dominance of banks was estimated as number of a particular bank divided by the total number of banks.

Results

Names and location of existing banks

Table 1 provides information on the available banks and their locations in Ibadan North Local Government Area. The locations of the banks were mapped with the aid of global positioning system device (Fig 1). The information reveals that among the banks, First bank and Wema bank were the commonest with relative dominance of 14% respectively; it was followed by Skye Bank and Intercontinental Bank with relative dominance of 11.6% and 7% respectively. The least encountered banks in the area were Afribank, Access Bank, Diamond Bank, Bank PHB, Zenith Bank with relative dominance of 2.3% respectively. In addition,

locational analysis of the banks depicts that Bodija not surprisingly had 37.2% of the banks. The reason perhaps is not farfetched, as it is a commercial hub of the Metropolis. UHC and Agodi had 14% and 11.6% of the banks respectively due to institutional and Local Government land uses, which probably influence the establishment of banks. UCH being both an educational, residential and medical land use attracted the second highest number of banks in the area. Areas with the least number of banks were Secretariat, Total Garden and Ajibade with one bank each (2.3%). This implies that banks are not randomly distributed in the area, but tend to concentrate more in areas where the land use is favourable to doing business.

Table 1 Existing Banks in Ibadan North Local Government Area

Name of Banks	Frequency	Localities	%
Fin bank Plc	2	Agbowo & Agodi/ Gate	4.5%
Afribank Plc	1	UI	2.3%
First Bank Plc	6	UI, Bodija Market, Bodija/Secretariat, UCH,Mokola & Sango	14%
Access Bank Plc	1	Bodija Market	2.3
Spring Bank Plc	2	Bodija Market & Bodija	2.6%
Skye Bank Plc	5	Bodija Market, Bodija/secretariat , UCH, Ibadan Poly & Agodi	11.6%
Wema Bank Plc	6	Bodija Market, Bodija/Secretariat, Mokola, Sango, Ibadan Poly & Agodi	14%
Diamond Bank Plc	1	Bodija	2.3%
Bank PHB Plc	1	Bodija	2.3%
Zenith Bank Plc	1	Bodija (osuntokun)	2.3%
FCMB Plc	2	Bodija (Beside Aare junction) & UCH	4.6%
Intercontinental Bank Plc	4	Bodija, UCH, Yemetu & Sango	9.3%
Ecobank Plc	2	Bodija (Beside Favours Junction) & Agodi	4.6%
GTBank Plc	2	Bodija (opposite Awolowo Junction) & Ajibade	4.6%
UBA	2	Bodija (opposite Awolowo Junction) & UCH	4.6%
Union Bank Plc	2	Secretariat & UCH	4.6%
Stanbic IBTC Bank	3	Total Garden, Mokola & Agodi	7%

Source: Author's Fieldwork 2011

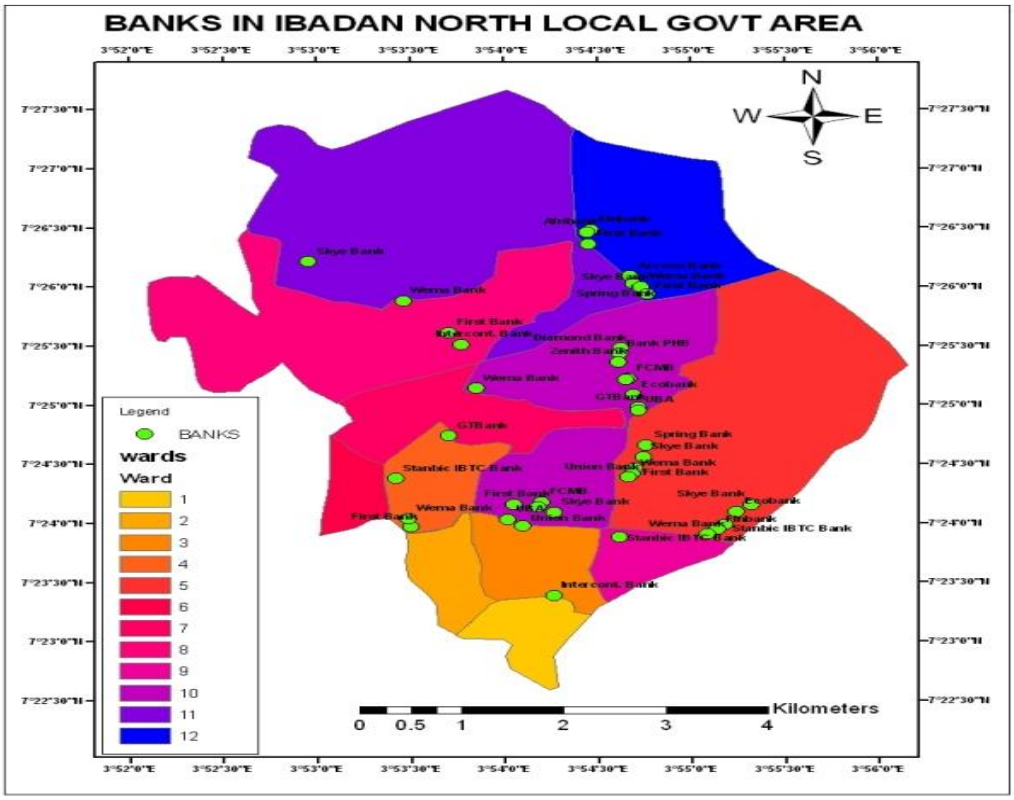

Fig 1: Map showing existing banks in Ibadan North Local Government Area.

Distributional pattern of banks

The distributional pattern of banks in terms of random, clustered, and dispersed was determined using point data (GPS) with aid of ARC GIS software package version 9.3. This was used to determine the distributional pattern of banks in the Metropolis. The distributional pattern of banks in the area was therefore determined using nearest neighbour analysis (Fig 2). The results show that distribution pattern is neither dispersed nor random but is clustered. This therefore implies that the location of banks in Ibadan North Local Government area is primarily influenced by the availability of government owned institutions/parastatals, educational institution as well as the existing of commercial activities. There is less than 1% likelihood that this clustered pattern could be the result of random chance. Since, the nearest neighbour ratio <1, the pattern is clustered. This implies that the data set has one or more groups of banks in clusters.

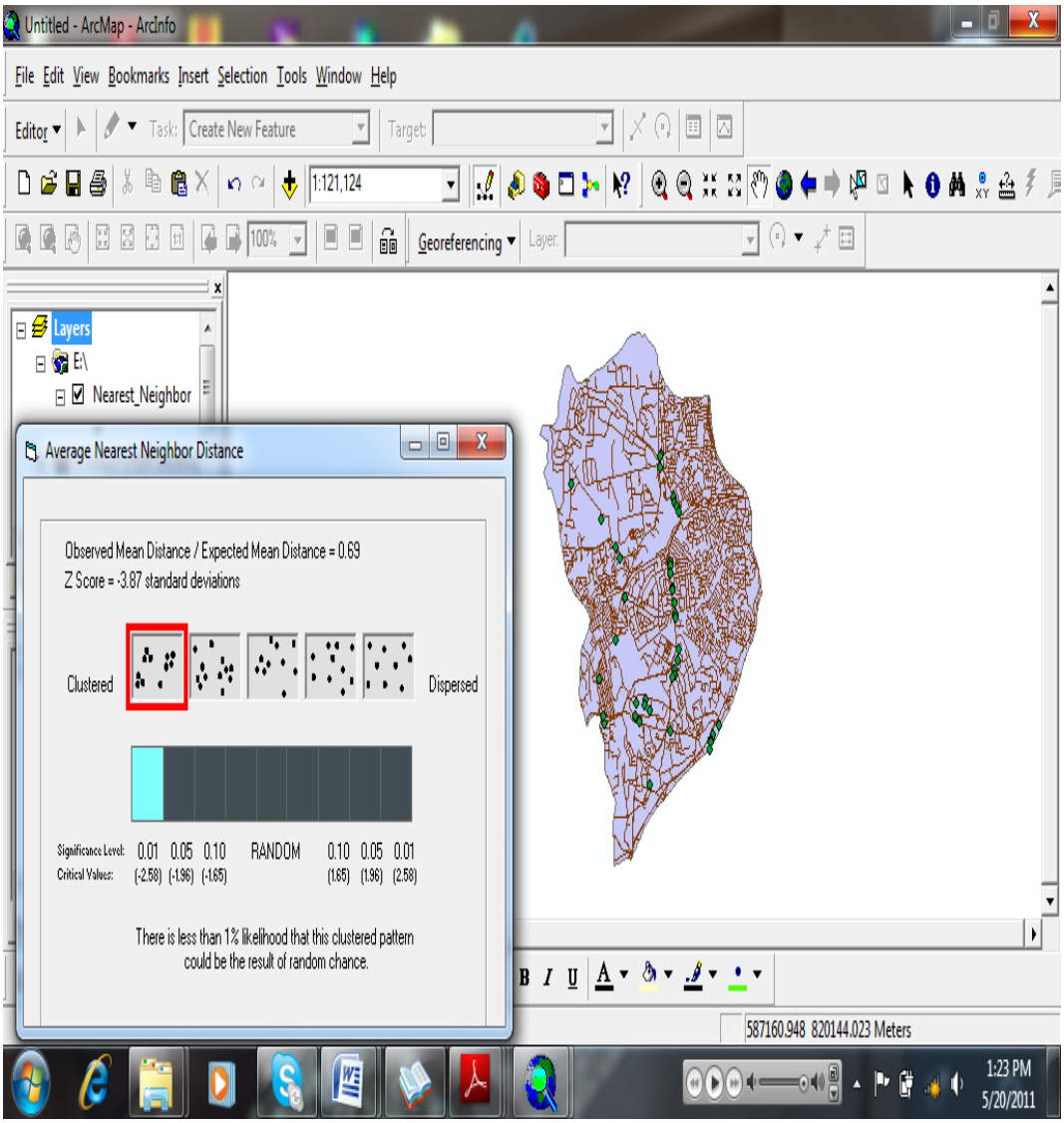

Fig: 2 showing distribution pattern of existing Banks
Near Neighbor Observed Mean Distance = 231.042222
Expected Mean Distance = 334.131679
Nearest Neighbor Ratio = 231.042222/334.131679
Nearest Neighbor Ratio = 0.691471
Z score = -3.870452
P – Value = 0.000109

Assesment of banks location

Fig 3 shows that 74.7% of the respondents assessed location of their banks as good; 18.7% rated the location of their banks as average; 4.0% described their banks location as poor, while 2.6% of the respondents said nothing about their banks location.This implies that the pattern of banks in the area is efficiently located to meet customer needs.

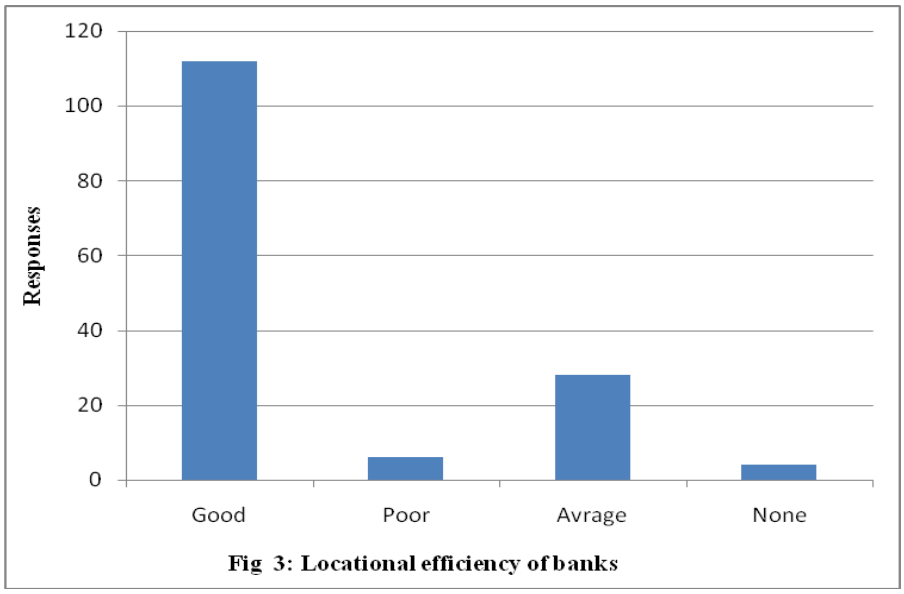

Fig 3: Locational efficiency of banks

Assessment of the relationship between population and location of bank

Here, the relationship between population and location of banks was examined using bivariate correlation (Pearson's Correlation). The result obtained is depicted in Table 2; it shows there was a weak, positive and insignificant correlation between population and location of banks ($p>0.05$). This invariably implies that population may not be a potent factor in the location of banks. Meaning that as population increases, the increase did not affect the location of banks in an area but the location of banks is based on service and administrative factors prominent in an area. Population is observed not be a potent factor in the location of banks.

Table 2 Relationship between number of banks and population size

		Population of Ibadan North	No. of banks
Population of Ibadan North	Pearson Correlation	1.00	.117
	Sig. (2-tailed)		.716
	N	12	12

Source: Author's Analysis (2011)

Bank Accessibility

Table 3 depicts that 94.7% of the respondents were of the opinion that their banks are easily accessible, while 5.3% alleged their banks are not easily inaccessible. This implies that banks based on their distributional pattern in the area are accessible to the people (customers) in area.

Table 3: Accessibility to banks

Options	Frequency	Percent
Yes	142	94.7
No	8	5.3
Total	150	100.0

Source: Author's Analysis (2011)

Regression analysis of the effect of location of banks on accessibility

The researcher sought to find out if the locational efficiency of bank in the Metropolis influences accessibility. This was determined using bivariate regression. The results obtained are presented in tables 4, 4.1 and 4.2 respectively. The result in table 5 shows there is a weak positive (0.45) relationship between location of banks and their accessibility to customers, while the coefficient of determination (R^2) revealed that 0.02% of the customers' accessibility was accounted for by the locational efficiency of banks. This further implies that 99.8% of customers' accessibility to banks is unaccounted to by their present locational pattern.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.045	.002	-.005	.31882

Source: Author's Analysis (2011)

The ANOVA result in table 4.1 shows that the locational efficiency of banks does not significantly influence accessibility ($F = 0.295$, $p>0.05$). This result perhaps reflects situation on ground, as the location and concentration of banks are observed to be influenced by the existence of government owned parastatals, institution and commercial land use.

Table 4.1: ANOVA result of the effect of location on accessibility

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.030	1	.030	.295	.588
Residual	15.043	148	.102		
Total	15.073	149			

Source: Author's Analysis (2011)

In addition, the result in 4.2 indicates that location of banks results in 3.6% change in customers accessibility to the banks, which implies that 96.4% of inaccessibility to banks is not caused by location but by other factors not considered in the analysis. This is so because customers based on service rendered would prefer visiting banks far away their homes and places of work. It also shows that bank location does not imply accessibility. However, the results of t-test (table 5.2) shows that location of banks does not exert significant effect on accessibility ($t = 0.543$, $p>0.05$).

Table 4.2: Significance of the regression coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.857	.060		14.226	.000
Locational	.036	.067	.045	.543	.588

Source: Author's Analysis (2011)

Approximate distance to banks

Fig 4 shows the approximate distance to banks. It depicts that 38% and 36.7% of the respondents used < 1km to travel from their houses and offices/market to the banks; 32.7% and 31.3% used 1 – 2km to access the banks from their house and offices/market; 14.7% and 20.0% used 3 – 4km, while 14.7% and 12.0% of spend > 5km from their houses and offices/market to get o the bank.This implies <1km is used by majority of the respondents to travel to their banks from houses and offices/market.

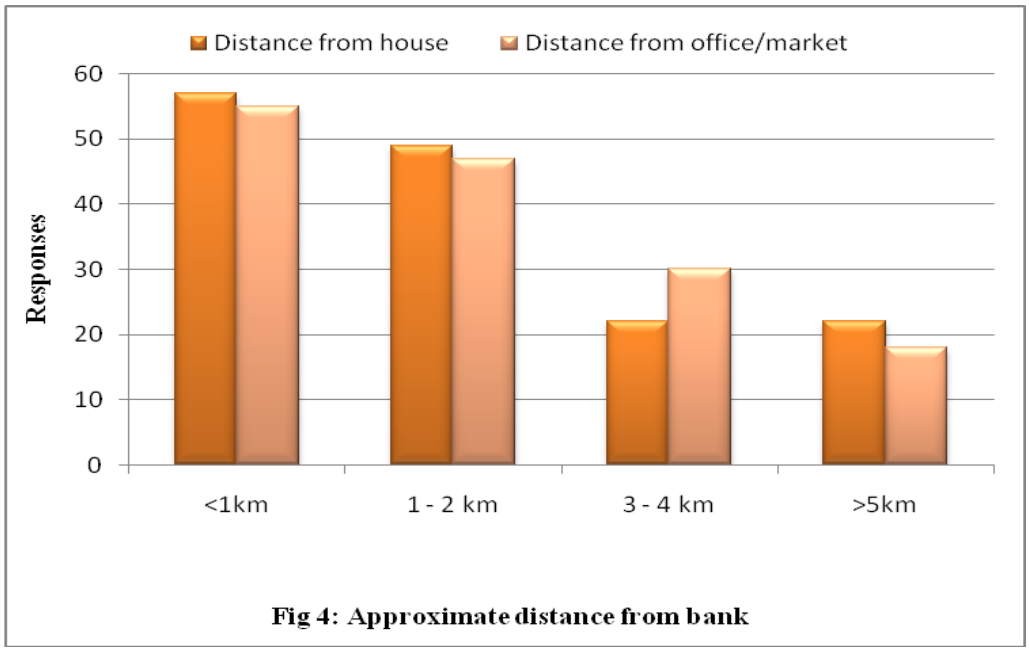

Fig 4: Approximate distance from bank

Cost of accessing banks

Fig 5 shows the cost of accessing banks.The information reveals that 51.3% and 44.0% of the respondents held the opinion that they spend ₦20 – ₦50 to access banks from their houses and offices/market; 29.3% and 24.0% spent ₦60 – ₦100 respectively to access their banks from homes and offices/market; 9.3% and 14.7% spent ₦101 - ₦500 to access the banks,

while 10.0% and 17.3% of the respondents incurred no cost to access banks from either their house or office. This reveals that people in the Metropolis incur cost in making financial transactions whether from their house, office, market or school.

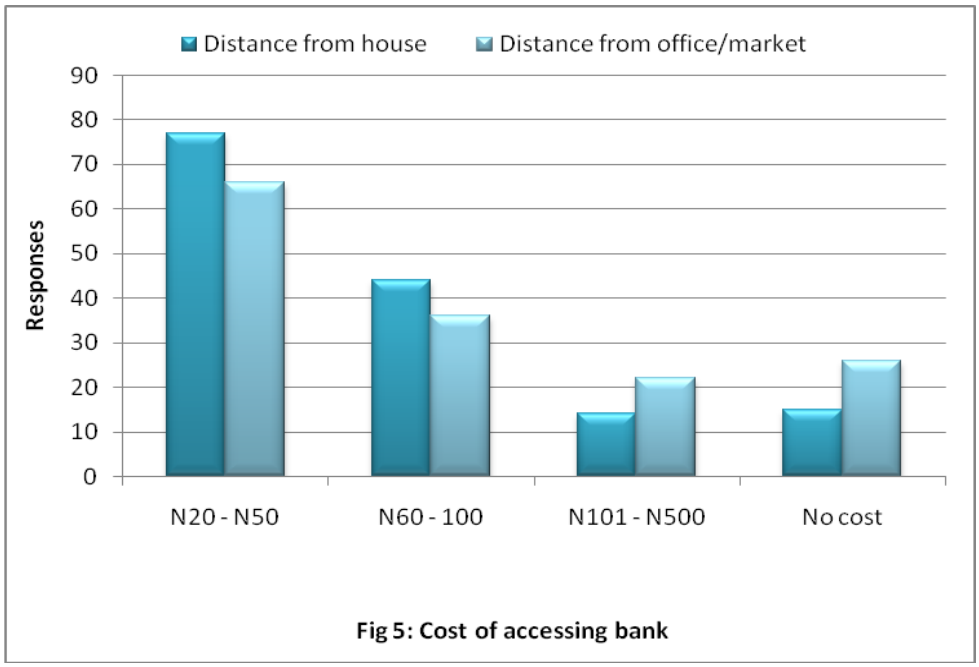

Fig 5: Cost of accessing bank

Service radius of selected banks

This was achieved using buffering. Buffering is a spatial analysis known as proximity analysis, generating zone of influence around a feature theme. It forms a polygon around a point, line or polygon theme by locating its boundaries at a specified distance. The point locations of the four selected banks based on the frequency of occurrence in the area were acquired with global positioning system. The map of the selected banks were created and buffered at 1km or 1000m (Fig 6 – 9).

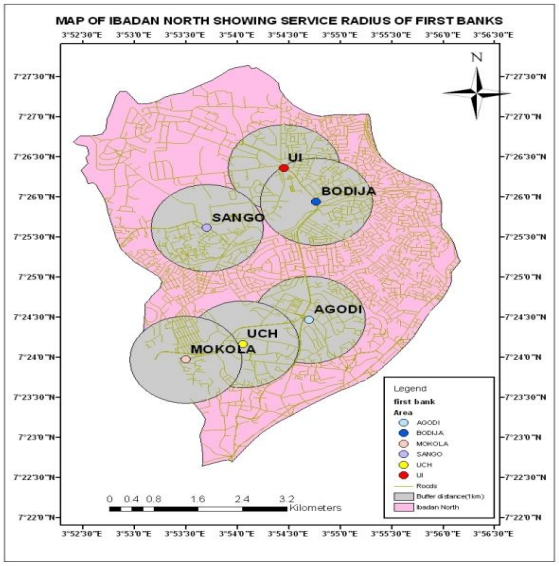

Fig: 6 Map of Ibadan north showing service radius of First Bank

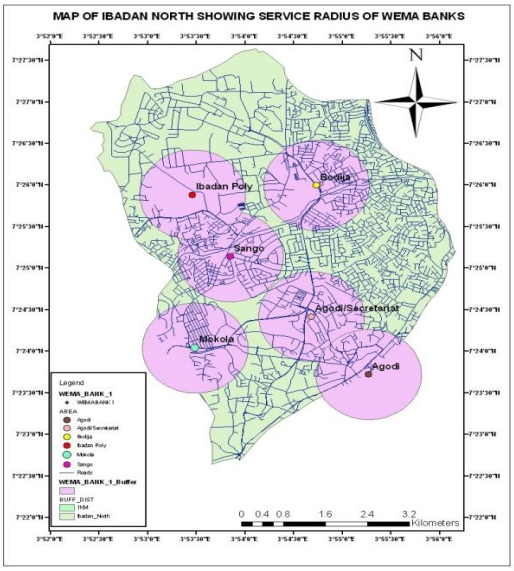

Fig: 7 Map of Ibadan north showing service radius of Wema Bank

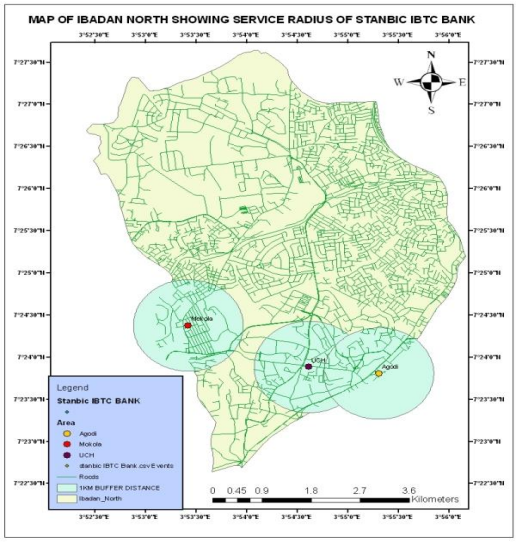

Fig: 8 Map of Ibadan north showing service radius of IBTC Bank

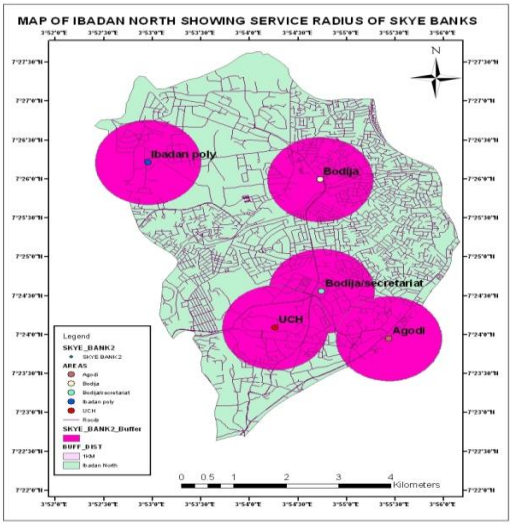

Fig: 9 Map of Ibadan north showing service radius of Skye Bank

Discussion

The analysed results reveal that banks in Ibadan Metropolis are unevenly distributed and customers travel some distance as well as incurs cost of ₦20- ₦50 naira to access their respective banks. This implies that though the banks are concentrated in some areas, but insignificant amount of money and distance is often spent and travelled by customers to access banking services. The distributional pattern of banks in the area is clustered and a large percentage are located at the core area of the Metropolis, probably due to the existence of government owned parastatals/institutions, privately owned businesses and commercial activities like market. In the area, banks are concentrating around places of economic activities, low and medium density residential areas, state and federal government owned parastatals, hospitals, university and polytechnic. About 60% of the banks are located in Bodija, Bodija market, UI, University College Hospital (UCH), Agodi GRA/Secretariat, Mokola, Coca- Cola, Sango and the Polytechnic of Ibadan. The study indicates that location of banks is highly accessible to majority of the customers irrespective of their clustering pattern. As a result of the essential service the bank renders to the general public, customers travel short distances, spend less cost and time in accessing banks.

Conclusion

This study with the aid of geographic information system (GIS) as a multi-dimensional tool has revealed apparently that banks in Ibadan North Local Government Area are clustered in relation to land use principally commercial centres and Federal and State government institutions. In addition, the research has shown the capability of GIS as a tool that can help solve problems that have spatial dimensions. However, to increase customers' accessibility to banks at relatively no or little cost, more banks should be established in area where they are insufficient to reduce travel distance and cost. Also, accessibility to banks should be improved upon by building more roads mostly access roads as well as rehabilitating old ones.

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Female Children`s Participation in Household Food Security Activities in Ijebu North Area of Ogun State, Nigeria.

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Abstract

This study investigated female children participation in household food security activities in Ijebu North, One of the twenty Local Government Areas in Ogun State , Nigeria. A multi stage sampling procedure was used to divide the area to six strata/ localities, ten female children of age 7-13years were sampled randomly from each locality to make a total of sixty respondents. Questionnaire was used to elicit information from them on their demography and participation .The data collected were analyzed with frequency tallies and percentages, The inferential statistics used was chi-square analysis. Findings revealed that most (75%) of the children sampled were between the ages of 10 and 13years. They were largely (95%) literate only 5% of them did not have formal education Most (38%) of their parents/guardians were traders, 25% were artisans, 20% were civil servants while 16.7% were farmers. About half (42%) of the female children did not have good disposition towards participation in household food security activities never theless, 19.6% participated highly, 19.2% have medium while 19.2% have low participation. Encouragements were recommended in forms of advisory, training and incentives for effective female children`s participation in household food security activities.

Keywords ; Female child, participation, household, food security

Introduction

Food security for the nation is a goal that has to be focused upon by all the future role players in the Nigeria's Agricultural Sector. The central issue is that of sustainability that is, enhancing productivity. The futuristic aspect of food security implies a consideration for the future role players who are the rural children of today. **(FAO, 1994)**. Rural children, apart from representing considerable agricultural labour force, are often involved in a lot of domestic activities and yet, have to undergo career training preparatory to adulthood. **(Adeiga, 1997)**

Food security as a concept implies the availability of good nutritious food to every member of a particular locality or nation. It means the ability of people to get the food needed to remain healthy and active. It also means people being confident that adequate food will be available at all time. **(Habbard, 1995**).

Family food security is concerned with the household and the individual having access to the sufficient food for an active and healthy life, attention is focused on the household since the household is the basic learning and decision making unit of the most nutritionally vulnerable people (infants and children, pregnant and nursing women) **(Habbard, 1995**).

Sustainable Agriculture and Food Security

Examining the issue of food security viz a viz sustainable agriculture, it has been noticed that food security is not only a function of increased production but also of the ability of a large number of people to have access and meet the demand of required food. While it is true that sustainable intensification of agriculture is known to offer significant opportunities to improved production. **Pretty, et al (1996)** have observed that food security cannot be achieved without significant improvement in people`s entitlements and access to food" and that requires addressing the broader political and economic forces that shapen local farming practices and access to food. Sustainable food security depends on three key conditions:

i. Sustainable food production through the use of regenerative technologies & the full participation of farmers in the process of planning research and extension.

ii. A conserved natural resources base through approaches, practices and techniques that build upon the enhancement of health and diversity of available natural resources without depleting them.

iii. Entitlements or access to food through approaches that strengthen local capacity and build strong diversified rural economies.

Sustainability and Rural Children

FAO (1998) defining the meaning of sustainability says the children are the ultimate users of improved practices because of the trend of their involvement in agriculture. This implies that the future of sustainable agriculture management depends on an understanding of the issues and tenets of sustainability by the children; the continuity of the profession is in their hands . **George (1990)** explained that as sustainable practices favour the coming generations there is a need to teach the children who will soon have to uphold the tenets. The future of agriculture rests with rural children and the extent to which they embrace agriculture as a profession. Apart from this, the form of practices they engage in agriculture which is dependent upon their understanding of the impacts of the practices and their freedom of choice of practices will determine the sustainability of agricultural productivity**. (Ijere, 1988)**

The roles of children in family food security cannot be over emphasized. children has been defined as are those who have not yet assumed any adult tasks. Since there can be no standardized classifications of young people that is cross – culturally applicable to all nations.

For instance, the expectation of ten years old in Britain or United State will be different from that of Nigeria, Botswana and Mali. The term children has been operationalised and categorized within the context of their participation in Agriculture in Nigeria by **Adedoyin and Torimiro (1998**) in two ways. The first is that anyone who is still dependent on his parents for food, clothing, shelter and other social amenities is a child. This is called the dependency category. The second is based on age class and those within the bracket of 1 to 8 years are children

In Nigeria, children and youth constitute as much as 45% of the entire population with about 80% staying in the rural areas. **(FAO, 1995)**. Therefore, this study is focused on rural female children of the age between 7 and 13 years. In the past, children born in the family are classified according to their sex, male goes to the father where he helps his father on the farm and generally grooming up. The female children are groomed up by the mothers where they help in processing and marketing of farm produce. **(Okeowo, et al, 1999)**

Female children are of less importance in the farming families especially when compared with their male counterpart. In rural areas, parents were initially skeptical of the value and importance of western education for their children, a lot of them prevented their children (particularly female children) from going to school. **(Olutayo, 1994)**. Specifically, there was the thinking that female children or girls education would ultimately benefit their future husbands and not the parents and their kin. Female children were not usually sent to school because there was a general idea that they are not as important as their male counterparts especially in the continuity of the family name **(Fadipe, 1970**). It was generally believed that it was not worthwhile to waste money and resources on female children as they will end up in their husband's homes. Therefore, the female children help in family food security by doing such tasks as weeding in the farm, cracking of oil palm nuts, fetching water, fetching fire woods, processing of palm oil, frying of garri, hawking of farm produce, picking pepper, harvesting of vegetables, conveying fuel woods from the farm etc **(Orubuloye, 1987)**.

Problem Statement

Children are positively responsive to love and security. Children that were raised in home with parental love are likely to emerge as more active, out-going, socially assertive, independent, creative and lacking in hostility towards others and self **(Conger, 1977**).. Available evidence abounds that the future army of food producers have been engaged in harvesting, watering and marketing (**UNICEF, 1991**). However, such farming activities were allotted to children based on their gender. The tenderness and fragile nature of female children limit their participation in farming and household activities to mainly processing, marketing and watering. **(Orubuloye, 1987)**.

Objective of the study

The general objective of this study is to study the participation of female children in household food security activities in the study area.

The specific objectives are to investigate the female children`s personal and socio-economic characteristics and. ascertain the different types of activities performed by the female children in household food security.

Hypotheses of the study

The hypotheses set up to determine the relationships between the variables of importance are stated below in the null from, based on the objectives of the study.

Ho^{1}: There is no significant relationship between female children's participation in family food security and their personal and socio-economic characterisics

$Ho^{2:}$ There is no significant relationship between female children's participation in family food security and the different activities carried out by them.

METHODOLOGY

Area of study

The study area is located in Ogun state of Nigeria which is one of the 36 states in Nigeria. It was created in 1976 from the old western state with Abeokuta as the capital. The state is bounded in the West by the Republic of Benin and in the East by Ondo state. To the North of the state is Oyo state while Lagos state and the atlantic ocean are to the south. Ogun state covers about 16, 406.26 sq kilometers, approximately 1.76 percent of Nigeria total land mass.(**Ogun State Government,1982**).

The study area, Ijebu North Local Government Area has a number of communities totaling 176 with a total population of 280,520 inhabitants **(National Population Commission, 2010).** Male population accounts for 50.29% while female accounts for 49.71% of the whole population. Their major occupation is farming. Ijebu North Local Government Area is one of the 20 Local Government Areas in Ogun state.

Sampling techniques and sample size

Multistage sampling procedure was used in drawing the sample of the study. The sampling frame covers the towns and settlements in Ijebu North Local Government area. This procedure was used in dividing the local government area into 6 strata/localities, 10 families from each of the six (6) localities were randomly selected, one (1) female child (between the ages of 7 – 13) was selected from each of the families. The total numbers interviewed were sixty (60) respondents. In addition, their parents too were interviewed to confirm the children's information.

Research instrument

The research instrument for this study was an interview schedule. Structured questions were designed and used to obtain information from the female children and their parents. Relevant questions items were developed for use in collecting the data required for the study under the following sub headings:

a) Personal and socio-economic characteristics of the respondents.

b) Types of activities performed by female children in ensuring household food security.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

Majority of the female children selected for interview were between the ages of 12 and 13 years. They constituted about 40% of the whole respondents while 35% were between age 10 and 11 and 25% of the respondents were of age 7 and 9 years. Since there was a fixed range of age (7 – 13 years) to be reached, the percentages were randomly distributed among the ages. About 48.3% of the female children are Christians while 40% are Muslims. Also 11.70% of the respondents are traditionalists. This shows that most of the female children in the study area are religious.

On educational background, 95% of the children have one forms of education or the other, 18.3% have not completed primary education, 45% have primary education, 5% have not completed secondary education while 26.7% of the respondents are in secondary school. It was only 5% of the respondents that had no formal education.

Most of the female children's parents & guardians engaged in trading which constituted about 38.3% of the sample, 25% are artisans. 20% are civil servants while 16.7% are farmers by profession. The data showed that 73.3% of the female children lived with their parents while 26.7% of them stayed with guardians.

Participation in household food security activities

About 19.6% of the respondents (female children) were highly inclined to all the household food security activities at average level. About 19.2% have low participation while another 19.2% participated at medium level. However, 42.1% of respondents did not have good disposition towards household food security activities.

Test of hypotheses

Hypothesis one

$H0^1$: There is no significant relationship between female children participation in family food security and their personal and socio-economic characteristics.

The personal and socio-economic characteristics selected are age, religion, educational level, occupation of parents. As presented in Table 3 the chi-square calculated for all the variables are greater than the chi-square values (tabulated). Hence, the null hypothesis is rejected at 0.05 level of significance. Therefore, there is a significant relationship between the female children's participation in food security activities and their age, educational level, religion and occupation of parents, from this result in Table 4. It is evident that their age will limit their participation e.g. a 7 years old child cannot participate highly in farming but in other activities. Also, some female children are not likely to engage in some activities like street trading because of their educational level i.e. secondary school level.

Hypothesis two

H_0^2: There is no significant relationship between female children's participation in family food security and the different activities carried out by them.

Table 4 shows that at 0.05 level of significance, the chi-square values calculated were greater than the chi-square value tabulated for all the activities tested, .hence the null hypothesis be rejected while alternative hypothesis was accepted. It therefore states that there was a significant relationship between the female children's participation and the different food security activities carried out by them.

CONCLUSION

Participation of female children in household food security activities is necessary to guarantee sufficiency in household food requirements of rural dweller in the areas under study. Such participation would also serve to enhance children's discipline (especially females) as they will have less time to engage in fruitless activities.

Female children need to gain experience in the ways their parents (mother) generate income for family upkeep. Therefore, their additional contributions would help to increase family income. It would prepare the female children for self reliance in the future especially to engage in self-employment.

RECOMMENDATION

Based on the finding of this study the following recommendations are proposed. Firstly,

Effort should be made by Governmental, Non-Governmental Organizations, private and community organizations and individuals to promote female participation in household food security activities. Secondly, provision of motivational factors or encouragement to the girls such as advisory services, pocket money percentages of returns in order to motivate them for more effective performance in household food security activities will be helpful.

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Table 1: Socio-economic characteristics of the respondents

Age	**Frequency**	**Percentage (%)**
7 – 9	15	25.0
10 – 11	21	35.0
12 – 13	24	40.0
Total	60	100.0
Religion	**Frequency**	**Percentage (%)**
Christianity	29	43.0
Islam	24	40.0
Traditional	7	11.70
Total	60	100.0
Education	**Frequency**	**Percentage (%)**
No formal Education	3	5.0
Incomplete Primary Education	11	18.3
Primary Education	27	45.0
Incomplete Secondary Education	3	5.0
Secondary Education	16	26.7

Total	60	100.0
Parents/Guardians` Occupation	**Frequency**	**Percentage (%)**
Trading	23	38.0
Artisan	15	25.0
Farmers	10	16.7
Civil servants	12	20.0
Total	60	100.0

Table 2. Female children participation in household food security activities

	No participation		**Low participation**		**Medium participation**		**High participation**		**Total**	
Activities	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Food preparation	2	3.3	14	23.3	15	25.0	29	48.3	60	100
Water fetching	3	5.0	6	10.0	12	20.0	39	65.0	60	100
Caring of infant	24	40.0	10	16.7	12	20.0	14	23.3	60	100
Street trading	22	36.7	10	16.7	8	13.3	20	33.3	60	100
Firewood gathering	19	31.7	8	13.3	26	43.3	7	11.7	60	100
Shop attendant	26	43.3	14	23.3	9	15.0	11	18.3	60	100
Harvesting of farm produce	27	45.0	12	20.0	11	18.3	10	16.7	60	100
Garri frying	42	70.0	6	10.0	8	13.3	4	6.7	60	100
Palm oil processing	42	70.0	16	26.7	2	3.3	-	-	60	100
Weeding on the farm	18	30.0	18	30.0	21	35.0	3	5.0	60	100
Farming	18	30.0	18	30.0	21	35.0	3	5.0	60	100
Paid site labour	15	91.7	5	8.3	-	-	-	-	60	100

Table 3. Chi-Square Analysis between Female Children's Characteristics and Participation in Household Food Security Activities .

Variables	X^2 **cal**	**d.f**	**L.S**[(a)]	**D**
Age	11.947	6	0.063	S
Religion	3.522	2	0.172	S
Educational level	13.193	4	0.010	S
Occupation of parent	1.450	3	0.694	S

Table 4. Chi-square analysis between female children's participation in household food security activities and different activities .

Variables	x^2 cal.	d. . f	x^2 tab.	l. s (a)	D
Food preparation	24.812	3	0.00	0.05	S
Fetching of water	11.425	3	0.010	0.05	S
Street trading	1.120	3	0.772	0.05	S
Caring of infants	5.544	3	0.136	0.05	S
Firewood gathering	6.638	3	0.084	0.05	S
Shop attendant	0.840	3	0.840	0.05	S
Harvesting of farm produce	22.091	3	0.00	0.05	S
Gari frying	9.968	3	0.019	0.05	S
Palm oil processing	3.523	2	0.172	0.05	S
Weeding on the farm	8.307	3	0.040	0.05	S
Farming	11.114	3	0.003	0.05	S
Paid site labour	12.235	2	0.002	0.05	S

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Influence of Job Satisfaction and Organization Work Climate on Job Performance.

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Abstract

This study investigated the influence that job satisfaction and organization work climate has on job performance. It also investigated the relationship between the job variables (job satisfaction and organization work climate) and job performance. A total of One hundred and Seventy-nine (179) employees randomly selected from among the non-academic staff of Ekiti State University, Ado-Ekiti in Nigeria participated in the study. The participants comprised of Eighty-nine (89) male and Ninety (90) female employees with age range of 25 years to 55 years. Three research instruments were used to obtain data from the participants namely Minnesota Satisfaction Questionnaire (MSQ), Index of Organizational Reaction (IOR) and Perceived Work Performance Scale (PWPS). 2x2 Analysis of Variance (ANOVA) was used to test for the influence of job satisfaction and organization work climate on job performance while Pearson product moment correlation was used to test for the relationship between the job variables and job performance. Results revealed that no significant relationship exist between job satisfaction and job performance. Likewise, there was no significant relationship between organization work climate and job performance. Results also showed that there was no influence of job satisfaction and organization work climate on job performance. It was recommended that management of organizations should identify those factors that could motivate their employees, and provide such in order to boost performance on the job.

Keywords
Job satisfaction, Organization work climate, Job performance, Employees, Organization, Management.

Introduction

Organizations need highly performing individuals in order to meet the organizational goals, to deliver the products and services the organizations specialized in, and to achieve competitive advantage. Accomplishing tasks and performing at a high level can be a source of satisfaction, with feeling of mastery and pride. Low performance could lead to not achieving the individual and organizational goals which might be seen as dissatisfying or as a personal failure. Performance is a multi-dimensional concept. On the basic level, Van Scotter, Motowidlo & Cross (2000) distinguish between task and contextual performance. Task performance refers to an individual's proficiency with which he/she performs activities which contribute to the organization's technical core. This contribution can be both direct and indirect. Contextual performance refers to activities which do not contribute to the technical core but which support the social-psychological environment of the organization in which organizational goals are pursued. Contextual performance includes behaviours such as helping co-workers, being a reliable member of the organization, and making suggestions about how to improve work procedures.

There are two approaches that can be differentiated in workplace factors and their relationship to individual performance. These are, those that focus on situational factors as enhancing and facilitating performance, and those that focus on situational factors as impediment to performance. A prominent approach within the first category is the job characteristics model of Hackman & Oldham (1976). In this model, Hackman and Oldham assumed that job characteristics (such as skill variety, task identity, task significant, autonomy and feedback) have an effect on critical psychological states (i.e., experienced meaningfulness, experienced responsibility for work outcome, knowledge of the results of the work activities) which in turn have an effect on personal and work outcomes, including job performance. Organizations are increasingly implementing team work and other group work arrangements (Stevens, Shaft & Vessey, 1998), therefore, one can argue that organizations become more interested in team performance than individual performance. However, because teams are composed of individuals, team processes and team performance cannot be completely understood without taking individual performance into account. What is regarded as good individual performance in these interactions varies largely between different cultures. When organizations ignore these differences and implement globally the identical selection, training, and performance evaluation procedures, they might miss those features and behaviours which are perceived as the most appropriate in a specific culture, that is, those which constitute high individual performance.

It has long been known that worker's efficiency is in part, a function of various aspects of organization character. One way to think of the character of an organization is to speak of the climate of the organization. Organization climate may be described as democratic or authoritarian. One may be aggressive and another impersonal. The condition of climate in the organization in which people work can have adverse effect on their job performance (Dimitriade, 2007). A climate is built up through years of certain type of leadership, a certain level of performance, a certain discipline or lace of discipline and possibly many other factors in the organization (Eze, 1984). Organization climate are those characteristics that distinguish an organization from other organizations, and that influence the behaviour of people in the organization (David, 1976). It consists of a set of characteristics which are relatively enduring

over time, and influence the behaviour of the people in the organization (David, 1976). The characteristics include size, structure, leadership pattern, system complexity, goal direction and communication networks. It is an indirect determinant of behaviour. It acts upon attitudes, expectation, and states of arousal, which are direct determinants of behaviour (Forehand & Gilmer, 1986). Organization climate are the satisfying tendencies (intrinsic and extrinsic) of the organizational environment. That is, those aspects of climate that leads to the arousal of different kinds of satisfaction. It could be favourable or unfavourable depending on the environment.

Organization is an open system in constant interaction with the environment, taking in raw materials, peoples' energy, and information converting them into products and services that are expected back to these various environments (Huselid & Day, 1991). It consists of any large group of people engaged in mutually dependent activities for some specific purpose (Johnson & Malynte, 1998). Management varies from organization to organization, but the management of any organization is usually the employers, while the major aim of every organization is to achieve the purpose for which the organization is set up. This could be achieved by the effectiveness of the employees through a conducive organization climate. Employees' satisfaction and organization climate are very important in order to achieve organizational efficiency and effectiveness. It is important to understand how individual personalities and job requirements interact to produce a climate and how this climate, in turn influences job satisfaction among employees in the organization. The concept of organization climate fits the need for a broader framework to describe the environmental influence on behaviour in organization (Atkinson, 1966). Nigeria is a developing economy with vast potentials for full developments. The mechanism for the attainment of high level of development is the establishment of various universities with conducive climate that will help the country channel her resources into productive areas (Iyanda, 1988). According to Akpan (1982), goals are based on the proper economic utilization of resources provided the climate in the organization is favourable. In essence, organization climate play a major role in the enlistment of a teaching organization and this in turn, will enhance the process of transforming underdeveloped economy into a developed one.

Organization climate in Nigeria can be said to follow most of the advocacy of the scientific managers (Ojukwu, 1982). However, the climate is characterized by job insecurity, work uncertainty, lack of trust, lack of confidence, and lack of the three capital senses namely the sense of belonging, sense of direction and the sense of ownership (Eze, 1984). These factors bring about job alienation, job stress, low morale, low productivity, and lip and eye service. Employees' level of satisfaction on the job can be influence by factors such as supervisory relationship and co-workers relationship (Cohen, 1999).

In an organization where most of the needs of the employees are not satisfied or met by the management, conflicts are the inevitable end of it. Expression of conflict could be in form of strike, work to rule, and the likes. The problem of employees dissatisfaction has become a cause for alarm in many organizations in Nigeria today (Ojukwu, 1982). This is because the job satisfaction level that a worker experience affects his/her performance on the job, and this will eventually have an effect on his/her behaviour in the work situation. Job satisfaction of employees in an organization has to do with motivation in work which excludes punishment or deprivation of rights and privileges. In today's organizations, individuals with job dissatisfaction may continue at it, since the alternatives available are more distasteful where there are any. Human motivation is characterized by basic needs specifically directed toward achieving certain desirable goals or conversely towards avoiding other undesirable negative consequences (Maslow, 1954). In every organization, employees value physical environments

that are not dangerous or uncomfortable. Moderate degree of heat and light are also desirable. This working condition in an organization should be compatible with the physical needs of workers which facilitate the achievement of workers' goals and high productivity. People prefer working to being idle, therefore people work when the valence of outcomes they expects from working are either positive or negative compare to the attractiveness of outcomes they expect to attain from not working. Conducive environment for workers to perform a given task is needed, because by so doing the psychological contract between management and employees is achieved. Workers may be interested in showing some amount of satisfaction depending on the ability of management to motivate the employees to work so as to achieve the goals of the organization.

Work climate created in a workplace had significant consequences on employees' perception of the work context purportedly influenced the extent to which people were satisfied and perform up to their potential, which in turn, was predicted to influence organizational productivity (Katz & Kahn, 2004). Climate has been described as an experientially based description of the work environment and, more specifically, employees' perception of the formal and informal policies, practice and procedures in their organization (Schneider, 2008). Organization climate is a unit level construct. When employees within an organization agree on their perceptions of the work context, then organization climate is said to exist (Jones & James, 2004). A large number of studies have consistently demonstrated relationship between organization climate and individual outcomes such as performance, satisfaction, commitment, involvement and accident (Joyce & Slocum, 2004). Organization climate comprises of cognate sets of attitudes, values and practices that characterize the member of a particular organization.

Xaba (1996) defined organization climate as consciously perceived environmental factors subject to organizational control. Frese, Garst and Fay (2000) coined the term climate to describe the attitudes, feelings and social process of organizations. It is a set of attributes, which can be perceived within a particular organization.

Nuga (1988) carried out a study to investigate into the nature of organization climate in Nigeria organizations. He constructed an organization climate test to compare the organization climate existing in the private and public organizations. His result shows that there were no differences between the climate generated in the private and public organizations in Nigeria. Several studies have focused on perceptually based nature of climate dimensions and job satisfaction. Dillani (2004), using perception data from an electronics firm, studied the multiple impacts of organization climate components and individual job values on workers satisfaction. They found a great impact on satisfaction with interpersonal relationship on a job, a moderate impact upon satisfaction with recognizable advancement in the organization, and relatively less impact upon realization from task involvement. Gaertner (2000) studied managers from two different industrial organizations and found climate dimension to be moderately related to job satisfaction facets such as security, working conditions, and advancement opportunities.

Ibukun (2004) asserted that one strategy for ensuring the satisfaction and achievement of a group goal is through the creation of conducive mental and physical environment. Campbell, Dunnette, Lawler and Neck, (1974) identified four factors common to organization climate namely; individual autonomy, the degree of structure imposed upon the position, reward orientation and consideration, and warmth and support. In their study, they viewed organization climate as a set of attributes specific to a particular organization that may be included from the way the organization deals with its members and its environment.

Job satisfaction is a pleasurable or positive emotional state resulting from the appraisal of one's job experiences and it constitute an attitudinal variable that measures how a person

feels about his/her job including different facets of the job (Johnson & Malynte, 1998). It is an overall feeling about one's job or career in terms of specific facets of job or careers (e.g compensation, autonomy, and co-worker). It can be related to specific outcomes such as productivity (Terrel, Price & Joyner, 2008). Job satisfaction means the contentment of the employees on their jobs. It is the personal evaluation of the job conditions (the job itself, the attitude of the administration, etc.) or the consequences (wages, occupational security, etc.) acquired from the job (Fletcher & Williams, 2006). When the employees see that their expectations are not met in the job environment, job dissatisfaction emerges. It leads to the decrease in productivity, reduces organizational commitment and commitment to the work, and increases the rate of the optional discontinuation of the job (Santhapparaj, Srini & Ling, 2005).

Job satisfaction is very important in an organization because if employees are not satisfied, their work performance, productivity, commitment as well as the interpersonal relationship with the management and their subordinates tend to be lowered (Fajana, 1996). Ojukwu (1982) conducted a research using Job Description Index (JDI) to measure job satisfaction of Nurses, Doctors and Technologists. He found out that all the three groups favoured pay and promotion which are part of organization climate as their highest source of job satisfaction. Rose (2001) viewed job satisfaction as a bi-dimensional concept consisting of intrinsic and extrinsic satisfaction dimension. She further asserted that intrinsic source of satisfaction depend on individual characteristic of the person, such as ability to use initiative, relationship with supervisor and relationship with the work that the person actually performs. All these are symbolic and quantitative facts of the job. She further stressed that extrinsic source of satisfaction are situational and depends on environmental factors such as pay, promotion and job security. These are financial and other material reward of a job. Erikson, Pugh and Gunderson (1972), found out that personnel in organisation experience greater job satisfaction and higher level of job involvement when their rates of advancement compare favourably with their expectation, but dissatisfaction and low level of job involvement emerge as advancement rate were recorded. The concept of job satisfaction is surrounded with many factors that could motivate employees positively so that employees could be productive. Job related environment and organization climate are some of these factors. It is a common view that Nigerian workers are extrinsically motivated. This is mainly because they are still trying to satisfy their lower order needs. They are condemned to execute orders in as much as their needs will be satisfied (Adekanmbi, 2000).

Organizational theorists have divided job performance into two categories namely; task performance and dispositional performance. Task performances are tasks and responsibilities of each person and related directly to all things that must be done by that person such as monitoring absent or present employees. Dispositional performance helps organization to survive (Micholson & Mitjus, 1992). Van Scotter, et al (2000) makes a difference between task and dispositional performance. The first include part that expressed formal job, and the later include those that have effect on psychological, sociological and organizational behaviours. In his work, Nwachukwu (1987) identified supervision, leadership style, decision making, policy formulation and implementation as factors that influences performance on the job. In the same vein, management functions (such as supervision, leading and directing) in the work environment have been found as key factors in job performance (Lambert, 2005). Frese, et al (2000) reported that although job satisfaction and job performance do correlate, one does not cause the other. To them, satisfaction and performance are related because each is the result of employee's personality. Personality traits include emotional stability, extroversion and conscientiousness (Fried, 1991). Frese, et al (2000) found that employees who have an overall negative attitude to all things in life are not likely to be satisfied on their job regardless of

performance because of their personality trait. They further reported that anxious and depressed people typically won't find satisfaction no matter how many jobs they try. The same goes for those with low self-esteem. They showed that employees with high self-esteem tend to be more satisfied with their job than those who do not have that level of confidence. They concluded that workplace interventions to improve performance by exclusively targeting employees' satisfaction are likely to be effective.

There has been high incidence of tardiness, strikes, low level of productivity and disruptive behaviours among employees in organizations. There is also the problem of how to determine variables that may account for job satisfaction and to determine the exact nature and magnitude of organization climate necessary to keep a group of workers functioning optimally at all times. It is assumed that when workers are adequately motivated in their job, they will be committed to the job and subsequently, their job performance output will be high. Organization climate has been regarded as a contributor to an individual satisfaction at work (Adekanmbi, 2000). In the view of the traditional management, financial incentive is a key factor in influencing workers satisfaction. Therefore, this study aimed at clarifying whether organization climate and job satisfaction will influence job performance or that there may be any individual influence of the identified variables on job performance.

Hypotheses

(1) Job satisfaction will have a significant relationship on job performance.

(2) Organization work climate will have a significant relationship on job performance.

(3) Job satisfaction and organization work climate will significantly influence job performance.

Research Design

This study adopted a descriptive survey design of the ex-post facto type. Questionnaire was used to generate data from the participants. The independent variables of this study are job satisfaction and organization work climate while the dependent variable is job performance.

Research Participants

Participants used in the study were One hundred and Seventy-nine (179) employees randomly selected from among the non-academic staff of Ekiti State University, Ado-Ekiti in Nigeria. They comprised of 89 males and 90 females. The age of the participants ranged from 25 years to 55 years. The participants comprised of both married and single workers. The minimum educational qualification of the participants is Secondary School Certificate (SSCE) while the maximum educational qualification is University Postgraduate degree.

Instruments

Three standardized instruments were used to generate data for this study. They are:

(1) Minnesota Satisfaction Questionnaire (MSQ) developed by Weiss, Dawis, England and Lofquist (1967). It is a 20-item inventory designed to assess job satisfactoriness which is the fulfilment a worker derives from his/her input into the job environment, and job satisfaction which is the fulfilment the job environment provides a worker. Three components of the fulfilment obtained with the inventory are; Intrinsic Satisfaction (I), Extrinsic Satisfaction (E), and General Satisfaction (G). Weiss, et al (1967) reported a one week interval test-retest reliability coefficient of .89 and one year interval coefficient of .70. By correlating

the general satisfaction scale of MSQ with the overall score on Job Description Index by Smith, Kendal and Hulin (1969), the concurrent validity coefficients obtained by Wanous (1974) for American Samples is .71 and by Mogaji (1997) for Nigerian Samples is .55

(2) Index of Organizational Reaction (IOR) developed by Smith (1976). This instrument measured 8 items namely; supervision, company identification, kind of work, amount of work, co-workers, physical work conditions, financial rewards, and career future. It has a validity coefficients of .44 (supervision), .70 (company identification), .51 (kind of work), .50 (co-workers), .64 (physical work conditions), .45 (financial rewards), and .39 (career future).

(3) Perceived Work Performance Scale (PWPS) developed by Brown and Leigh (1996). It is a 10-item scale designed to measure individual perception of how a work is being performed. It is a 5-point Likert type scale divided into two dimensions namely; time commitment and work intensity. The scale measure employees' characteristic tendencies to work longer. The scale has coefficient alpha of .82 (time commitment .88 and .83; work intensity .82 and .83). The original values of the factor analysis ranged from .518 to .843 for work intensity, and .598 to .838 for time commitment.

Statistical Analysis.

In testing the hypotheses, 2x2 Analysis of Variance (ANOVA) and Pearson product moment correlation were used. The 2x2 ANOVA was used to test for the influence of job satisfaction and organization work climate on job performance while Pearson product moment correlation was used to test for the relationship between the variables

Results

Table 1: Pearson correlation table showing the relationship between job satisfaction and job performance.

Variables	N	M	SD	df	r	p
Job satisfaction	179	69.65	10.76	177	-.065	>.05
Job performance	179	45.62	9.21			

Table 1 shows that there is no significant relationship between job satisfaction and job performance, $r(179) = -.065$, $p>.05$

Table 2: Pearson correlation table showing the relationship between organization work climate and job performance.

Variables	N	M	SD	df	r	p
Organization work climate	179	69.65	10.76	177	.009	>.05
Job performance	179	124.3	17.67			

Result as indicated in Table 2 revealed that no significant relationship exist between organization work climate and job performance, r(179) = .009, p>.05

Table 3: 2x2 Analysis of Variance (ANOVA) table showing the influence of job satisfaction and organization work climate on job performance.

Source	SS	df	MS	F	p
Work climate	418	1	418		
Job satisfaction	87.643	1	87.643		
Work climate & job satisfaction	167.888	1	167.888	1.987	>.05
Error	14788.630	175	84.506		
Total	15037.12	179			

From Table 3, result showed that job satisfaction and organization work climate do not influence job performance, F(179) = 1.987, p>.05

Discussion

This study is designed to examine the influence of job satisfaction and organization work climate on job performance of workers. It is also designed to investigate the relationship between job satisfaction and job performance, and the relationship between organization work climate and job performance. The study is geared toward understanding the behaviour of employees especially in the area of tasks performance and the intricacy of this to job satisfaction.

Findings from this study revealed that no significant relationship exist between job satisfaction and job performance. The plausible explanation of this may be as a result of the focus on which performance is measured. Measurement of performance was based on the degree to which employees reaches a quantitative requirement output or satisfied some pre-conceived standard of performance. This means that any employees that does not reach this standard is said to be non-performing on the job. Another plausible explanation is that the performance of employees on the job may not necessarily be a result of job satisfaction. This is because there are some employees that are highly performing on the job because they don't want to loose the job. This category of employees fears being thrown into the unemployment market. To this category of employees, their job performance is not a result of job satisfaction but the fear of going back to unemployment status. This suggests that many employees are still battling with the basic needs for human survival such a s food, clothing and shelter. This result also indicates that adding more monetary incentives to a job does not lead to high job performance especially if there are no challenging activities and tasks attached to the job or if the leadership and supervision style in the organization is autocratic with no positive human management. The finding of this study is supported by previous works of Katz and Kahn (2004), Fajana (2002) and Cohen (1999). However, the results of this study did not support the previous findings of Ojukwu (1982) and Rose (2001).

Furthermore, no significant relationship was found between organization work climate and job performance. The plausible explanation of this finding may be as a result of the characteristics of the organization climate in the higher educational institutions. The climate is characterized by strikes, bad leadership style, lack of recognition for a job done well, insufficient material resources needed for effective discharge of duties, shortage of personnel, eye and lip service, unchallenging tasks, lack of staff development activities which hinders

employees from being equipped with the knowledge and skills that are needed to provide quality service. High job performance cannot be achieved in the midst of these characterized challenges.

Findings of this study showed that job satisfaction and organization work climate does not influence job performance. The explanation of this result is that an employee's performance on the job is affected by his/her ability and skill, as well as a number of situational and environmental factors such as management leadership style, boredom and frustration, low quality of stocks or materials, personnel policies, suitable career ladder, mechanical breakdown and poor market force. This finding corroborated the previous findings of Lambert (2005) who found that the number of management functions (such as supervision, style of leading and directing) in the work environment is the key factors in job performance. The work of Nwachukwu (1987) also supports this finding when he identified factors such as supervision, organization leadership style, decision making, policy formulation and implementation as influencing job performance.

Conclusion

The main aim of this study is to examine the influence of job satisfaction and organisation work climate on job performance. In view of the findings of this study, it is concluded that:

1. There is no significant relationship between job satisfaction and job performance.
2. There is no significant relationship between organization work climate and job performance.
3. Job satisfaction and organisation work climate has no influence on job performance.

Recommendations

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

1. Physical facilities that are considered pertinent for enhancing job performance should be put in place.
2. Organizations should create an enabling physical and psychological environment for their employees.
3. Effort should be placed on contextual performance relationship rather than task performance alone.
4. Management of organizations should identify those factors that best motivates their employees and provide such factors in order to boost performance on the job.
5. The management should continually strive to encourage and respect employees for improved performance.

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Market Basket Analysis (MBA): A Tool For local grocery shops/convenience stores to build strategy to compete with Supermarket

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Abstract:

Supermarkets are using transactions data to find out relationships between sales of one product with other. This is known as affinity analysis or marketing analysis. On the other hand most of the Grocery shops/Convenience stores are not using any strategy. The research is going to help the Grocery Shops/Convenience stores to analyze the sale of the product so that they can create competitive pricing to increase sales. The study discusses XLMiner as a tool for analyzing the transactions which will help the Grocery shop/Convenience stores owners to achieve the competitive edge through technology. Market Basket Analysis (MBA) has emerged as the next step in the evolution of merchandising and promotion. MBA has allowed leading retailers to quickly and easily look at the size, contents & value of their customer's market basket to understand the patterns of product affinities and products. The paper proves advanced implementation of market basket analysis leverage near-instant results to encourage "train- of-thought" or interactive analysis, enabling retailers to drill down into customer buying patterns over time to precisely target & understand specific combinations of products, brands, categories & even time of day.

Keywords: Retail, Supermarket, Grocery Shops, Convenience store, Market Basket Analysis, Affinity Analysis, Apriori Algorithm

Introduction

The Indian retail industry is divided into organized and unorganized sector. Organized retailing refers to trading activities done by licensed retailers. They are registered for sales tax, income tax etc. They are backed by corporate. Examples of this type of retailers are Hypermarket, Supermarket and also privately owned large retail houses. Unorganized retailing, on the other hand, refers to traditional format of low cost retailing for example the local *Grocery shops/ Convenience stores.* Retails are one of the fastest growing sectors in India. Western style malls have started coming in metros as well as in smaller cities. Supermarkets are generating huge amount of data after every sales. Wal-Mart alone serves customers more than 200 million times per week at more than 9,600 retail units and is now operating in 28 countries. They are using Point of Sales data to do Market Basket Analysis (MBA). This leads to a threat to local *Grocery shops/Convenience stores.*

Conceptually it very interesting to analyze a large set of data of a supermarket to discover buying pattern of consumer. This rule is known as Association Rule or Affinity analysis or Market Basket Analysis (MBA). One of the classic examples of Market Basket Analysis is where American Store was reported to have discovered that people buying nappies tended to buy beer. Further study discovered that new fathers who suddenly have no time to go out will pick up 6 pack of beer when making pampers run. Association rules mining has many applications other than Market Basket Analysis (MBA), including applications in medicine, e-commerce, classification, clustering, web mining and finance. According to Russell and Petersen Market Basket Analysis focuses on the decision process in which a consumer selects items from a given set of product categories on the same shopping trip.

In this paper Market Basket Analysis concept is used to find how the sales of Product X is dependent on sales of Y or vice versa? The XLMiner Tool has been used to find it out. To define association rule mining let us take simple example. Let us assume that a shop sells only a small variety of products:

Milk	Egg	Tea
Coffee	Sugar	Bread
Juices	Biscuit	Butter

Now consider the following 10 transactions details which give the sets of products different customer purchased in each transaction.

Table 1. Transaction with product purchased

Transaction ID	Products Purchased
1001	Milk, Bread, Butter
1002	Bread, Egg
1003	Milk, Sugar, Juices, Bread, Butter
1004	Coffee, Milk, Egg
1005	Egg, Tea, Juices, Sugar
1006	Biscuit, Milk, Juices
1007	Butter, Bread, Egg
1008	Milk, Bread
1009	Milk, Bread, Egg, Coffee
1010	Juices, Bread, Butter, Egg

Now the shopkeeper wants to find out which products are sold frequently so that he can offer discount in one product so that it will increase sales of other products which has been sold together frequently. This paper will use XLMiner to find solution to this problem so that the competitive pricing could be done in order to get more profits and make the customer loyal to Convenience Store.

Literature Review:

This section discusses different algorithm for Market Basket Analysis (MBA). All techniques have their own advantage and disadvantage. Among the different method discussed *Apriori* algorithm is better.

Zhixin et al [1] recommended an improved classification technique which is based on predictive association rules. Classification dependent predictive association rules (CPAR) is association classification. It combines the advantage of associative classification and conventional rule-based classification. CPAR is considered as better than conventional rule based classification for generation of rule. In CPAR most of the repeated calculation is ignored and multiple literals can be chosen to produce multiple rule at the same time.

Rastogi et al., [3] presents mining optimized association rules with categorical and numeric attributes. Due to large amount of data sets mining association rules has gained significant attention recently. Association rules are helpful for predicting correlations among the features of a relation and contain applications in marketing and many retail sectors. Moreover, optimized association rules are an efficient approach to focus on the most interesting features linking certain attributes.

Optimized association rules are allowed to include uninstantiated attributes and the difficulty is to find out instantiations such a way that either the support or confidence of the rule is maximized. In this approach, the optimized association rules difficulty is simplified by three methods

(a) association rules are permitted to include disjunctions in excess of uninstantiated features,

(b) Association rules are allowed to contain a random number of uninstantiated features, and

(c) Uninstantiated features can be either categorical or numeric.

This generalized association rules allows mining more helpful information about seasonal and local patterns linking multiple features. This paper also suggests an efficient method for pruning the search space when calculating optimized association rules for both categorical and numeric features. Experimental result shows that pruning techniques are effective for a huge number of uninstantiated features, disjunctions, and values in the domain of the features.

Chiu et al., [4] talked about Market-basket analysis is a well-known business problem, which can be (partially) solved computationally using association rules, mined from transaction data to maximize cross-selling effects. Here, the authors model the market-basket analysis as a finite mixture density of human consumption behavior according to social and cultural events. The author model the market-basket analysis as a finite mixture density of human consumption activities based on social and cultural activities. This results in the usage of principle component analysis and perhaps mixture density analysis of transaction data that was not obvious previously. The author contrast PCA and association rules mined from a set of

benchmark transaction data, to discover common and differences among these two data exploration tools.

Trnka, A. et al . [5] Proposed a paper which describes the way of Market Basket Analysis implementation to Six Sigma methodology. Data mining methods provide a lot of opportunities in the market sector. Basket Market Analysis is one of them. Six Sigma methodologies use several statistical methods. With implementation of Market Basket Analysis (as a part of Data Mining) to Six Sigma (to one of its phase), authors could improve the results and change the Sigma performance level of the process. In this research author used GRI (General Rule Induction) algorithm to produce association rules between products in the market basket. These associations show a variety between the products. To show the dependence between the products we used a Web plot. The last algorithm in analysis was C5.0. This algorithm was used to build rule-based profiles.

Users may want to find out buying habits of the customer. To expedite the processing of these types of queries **Miroslav et al. [6]** proposed an approach that converts market basket database into an item set trees. Their experiment indicated that the targeted queries are answered in time that is roughly linear in the number of Market baskets, N. Also the constructions of the item set tree has *O(N)* space and time requirements.

H. Y. Ma et al. [7] proposed a paper which addressed the effect of Simpson's Paradox on the decision maker in Market Basket Analysis. They also proposed a method called Common improvement, to handle Simpson's Paradox in selecting association rules. This is suited for detecting association rule that is likely to be ignored from the existing methods.

Giannotti et al. [8] proposed a paper which shows how a suitable integration of deductive reasoning, such as that supported by logic database languages, and inductive reasoning, provided by various data mining tools, provides a powerful paradigm, where methodologies for classes of challenging applications are conveniently specified.

Approach

Supermarkets are using transactions data to find out relationships between sales of one product with other. This is known as affinity analysis or marketing analysis. On the other hand most of the Grocery shops are not using any strategy. The research is going to help the Grocery Shops to analyze the sale of the product so that they can create competitive pricing to increase sales. The study discusses XLMiner as a tool for analyzing the transactions which will help the Grocery shop owners to achieve the competitive edge through technology. Market Basket Analysis (MBA) has emerged as the next step in the evolution of merchandising and promotion. MBA has allowed leading retailers to quickly and easily look at the size, contents & value of their customer's market basket to understand the patterns of product affinities and products. The paper proves advanced implementation of market basket analysis leverage near-instant results to encourage "train- of- thought" or interactive analysis, enabling retailers to drill down into customer buying patterns over time to precisely target & understand specific combinations of products, brands, categories & even time of day.

Assume that total number of products a shop stocks is *n* (*n=9 in above example)* and these Products are represented by $P\{p_1,p_2,p_3,p_4,\ldots\ldots p_n\}$. Total number of transaction is represented by *N* (N=10 for data represented in Table 1). It is denoted by $T\{t_1,t_2,t_3,t_4,\ldots\ldots t_N\}$ each with unique identifier (TID). Each TID has subsets of products from the product set P purchased by one customer. Let each transactions is of *m* products $\{p_1,p_2,p_3,p_4,\ldots\ldots p_m\}$ where $m \leq n$. Transactions may have different number of products. Association has nothing to do with

quantity so it can be considered as limitation of association rule, as how much Y has been sold when X was sold cannot be answered.

Association rules [2] are written as $X \rightarrow Y$ it means whenever X is appearing Y also tends to appear. X and Y can be single products or set of products. Here X is known as rules of *antecedent* and Y is known as rule of *consequent.*

For example, if X = {Egg, Milk} and Y = {Butter} and we get the association rule indicates that people who bought Egg and Milk also bought Butter.

Support and **confidence** are two measures of association rules.

Support is the frequency of transactions to have the all the items on both sets X and Y are bought together. For example, a support of 5% shows that 5% of all transactions (that we consider for the analysis) indicate that items on set X and Y are purchased together. In formula, support can be computed as probability of the union of set X and set Y.

$$support\ (X \rightarrow Y) = P(X \cup Y) = \frac{n(X \cup Y)}{N}$$

Notation of support count indicates the total frequency of the set union and is the total number of transactions for the analysis. A rule that has very low support may occur simply by chance. We can also view Support as the number of instances that the association rules will predict correctly.

Confidence of 80% shows that 80% of the customers who bought items on set X also bought items on set Y. In formula, confidence is computed as conditional probability to obtain set Y given set X. The conditional probability also can be computed through proportion of supports.

$$confidence\ (X \rightarrow Y) = P(Y|X) = \frac{n(X \cup Y)}{n(X)}$$

Notation is the total frequency of set X. Confidence is a measure of accuracy or reliability about the inference made by the rule that the number of instances that the association rules will predict correctly among all instances it applies to.

Lift is another term which is used to measure the power of association between the products which are purchased together. In other word lift of a rule is a relative measure in the sense that it compares the degree of dependence in a rule versus independence between the consequent items and the antecedent items. Lift is saying how much Y is likely to be purchased if the customer has purchased product X. If Lift if above 1.0 than it is of interest. The rules that have higher Lift will have higher dependence in them. In contrast, the percentage confidence is an absolute measure. Given the antecedent items, the percentage confidence is the probability that the consequent items will be purchased. It is the number of transactions that include the consequent divided by the total number of transactions.

Algorithm:

Lot of algorithm has been proposed to generate frequent item set but the classic algorithm is the *Apriori Algorithm* proposed by [6,7] Agarwal et al. Srikant (1993) It begins by

generating frequent item set with one item and then recursively generate frequent item set with two and then three and so on until it has generated frequent item set of all sizes.

Apriori Using a "bottom up" approach, where frequent item sets (the sets of items that follows minimum support) are extended one item at a time (a step known as candidate generation), and groups of candidates are tested against the data. The algorithm terminates when no further successful extensions are found.

Here is sample data of 100 transactions collected at Grocery Shop for finding Association among purchases. The preferences of sales could be different at different places. The data collected below is from Bangalore (India). For study the author selected few Item sets.

Dataset : D

TID	RICE	Pulses	Sugar	Flour	Egg	Butter	Milk	Tea	Nappies	Biscu	Fruit	Ready 2 eat Food
1001	1	1	1	1	0	0	0	0	0	0	0	0
1003	1	1	1	1	0	0	0	0	0	0	0	0
1004	0	0	1	0	1	1	1	1	1	1	0	0
1005	1	1	1	1	0	0	0	0	0	0	0	0
1007	1	1	1	0	0	0	0	0	0	0	0	0
1008	1	1	1	1	0	0	0	0	0	0	0	0
1009	1	1	1	1	0	0	0	0	0	0	0	0
1010	0	0	0	0	0	0	0	0	1	1	0	0
1012	0	0	0	0	0	0	0	0	1	1	0	0
1013	1	1	1	1	0	0	0	0	0	0	0	0
1014	1	1	1	1	0	0	0	0	0	0	0	0
1016	0	0	0	0	1	1	0	0	0	0	0	0
1017	0	0	0	0	0	0	0	0	1	1	0	0
1019	1	1	1	1	0	0	0	0	0	0	0	0
1020	1	1	1	1	0	0	0	0	0	0	0	0
1030	1	1	0	1	0	0	0	0	0	0	0	0
1023	0	0	0	0	0	0	0	0	1	1	0	1
1024	0	0	0	0	0	0	0	0	1	1	0	1
1026	1	1	1	1	0	0	0	0	0	0	0	0
1046	1	0	0	0	1	0	0	0	0	0	0	0
1028	1	1	1	1	0	0	0	0	0	0	0	0
1051	1	1	0	0	0	0	0	0	0	1	0	0

XLMiner : Association Rules

Data	
Input Data	Transaction!$C$1:$N$101
Data Format	Binary Matrix
Minimum Support	10
Minimum Confidence %	50
# Rules	232
Overall Time (sec)	3

Rule 232: If item(s) Egg= is / are purchased, then this implies item(s) Fruit Juice is / are also purchased. This rule has confidence of 76.19%.

Conf. %	Antecedent (a)	Consequent (c)	Support(a)	Support(c)	Support(a U c)	Lift Ratio
71.43	Nappies=>	Biscuit	14	19	10	3.759398
52.63	Biscuit=>	Nappies	19	14	10	3.759398
96.67	Pulses, Flour=>	RICE, Sugar	30	31	29	3.11828
93.55	RICE, Sugar=>	Pulses, Flour	31	30	29	3.11828
100	RICE, Sugar=>	Pulses	31	33	31	3.030303
100	Flour, Sugar=>	Pulses	29	33	29	3.030303
100	Flour, Sugar=>	Pulses, RICE	29	33	29	3.030303
100	Flour, RICE, Sugar=>	Pulses	29	33	29	3.030303
93.94	Pulses=>	RICE, Sugar	33	31	31	3.030303
87.88	Pulses, RICE=>	Flour, Sugar	33	29	29	3.030303
87.88	Pulses=>	Flour, RICE, Sugar	33	29	29	3.030303
87.88	Pulses=>	Flour, Sugar	33	29	29	3.030303
96.67	Pulses, Flour, RICE=>	Sugar	30	33	29	2.929293
96.67	Pulses, Flour=>	Sugar	30	33	29	2.929293
87.88	Sugar=>	Pulses, Flour, RICE	33	30	29	2.929293
87.88	Sugar=>	pulses, Flour	33	30	29	2.929293
93.55	Pulses, Sugar=>	Flour, RICE	31	32	29	2.923387
90.63	Flour, RICE=>	Pulses, Sugar	32	31	29	2.923387
93.94	Sugar=>	Pulses	33	33	31	2.846648
93.94	Sugar=>	Pulses, RICE	33	33	31	2.846648
93.94	Pulses=>	Sugar	33	33	31	2.846648
93.94	Pulses, RICE=>	Sugar	33	33	31	2.846648
93.75	Flour, RICE=>	Pulses	32	33	30	2.840909
90.91	Pulses=>	Flour, RICE	33	32	30	2.840909
93.55	RICE, Sugar=>	Flour	31	34	29	2.751423
93.55	Pulses, RICE, Sugar=>	Flour	31	34	29	2.751423
93.55	Pulses, Sugar=>	Flour	31	34	29	2.751423
85.29	Flour=>	Pulses, Sugar	34	31	29	2.751423
85.29	Flour=>	Pulses, RICE, Sugar	34	31	29	2.751423
85.29	Flour=>	RICE, Sugar	34	31	29	2.751423
90.63	Flour, RICE=>	Sugar	32	33	29	2.746212
87.88	Sugar=>	Flour, RICE	33	32	29	2.746212
100	Pulses=>	RICE	33	37	33	2.702703
100	Pulses, Flour, Sugar=>	RICE	29	37	29	2.702703
100	Pulses, Flour=>	RICE	30	37	30	2.702703
100	Pulses, Sugar=>	RICE	31	37	31	2.702703
100	Flour, Sugar=>	RICE	29	37	29	2.702703
89.19	RICE=>	Pulses	37	33	33	2.702703
83.78	RICE=>	Pulses, Sugar	37	31	31	2.702703
81.08	RICE=>	Pulses, Flour	37	30	30	2.702703
78.38	RICE=>	Flour, Sugar	37	29	29	2.702703
78.38	RICE=>	Pulses, Flour, Sugar	37	29	29	2.702703

90.91	Pulses=>	Flour	33	34	30	2.673797
90.91	Pulses, RICE=>	Flour	33	34	30	2.673797
88.24	Flour=>	Pulses	34	33	30	2.673797
88.24	Flour=>	Pulses, RICE	34	33	30	2.673797
97.3	Egg, Milk=>	Butter, Tea	37	37	36	2.629657
97.3	Butter, Tea=>	Egg, Milk	37	37	36	2.629657
96.77	Butter, Fruit Juice, Tea=>	Egg, Milk	31	37	30	2.615519
96.77	Egg, Fruit Juice, Milk=>	Butter, Tea	31	37	30	2.615519
81.08	Butter, Tea=>	Egg, Fruit Juice, Milk	37	31	30	2.615519
81.08	Egg, Milk=>	Butter, Fruit Juice, Tea	37	31	30	2.615519
93.75	Egg, Fruit Juice=>	Butter, Milk, Tea	32	36	30	2.604167
93.75	Butter, Fruit Juice, Milk=>	Egg, Tea	32	36	30	2.604167
83.33	Butter, Milk, Tea=>	Egg, Fruit Juice	36	32	30	2.604167
83.33	Egg, Tea=>	Butter, Fruit Juice, Milk	36	32	30	2.604167
87.88	Sugar=>	Flour	33	34	29	2.58467
85.29	Flour=>	Sugar	34	33	29	2.58467
100	Egg, Tea=>	Butter, Milk	36	39	36	2.564103
100	Egg, Fruit Juice, Tea=>	Butter, Milk	30	39	30	2.564103
92.31	Butter, Milk=>	Egg, Tea	39	36	36	2.564103
76.92	Butter, Milk=>	Egg, Fruit Juice, Tea	39	30	30	2.564103
94.12	Flour=>	RICE	34	37	32	2.54372
86.49	RICE=>	Flour	37	34	32	2.54372
93.94	Sugar=>	RICE	33	37	31	2.538903
83.78	RICE=>	Sugar	37	33	31	2.538903
93.75	Fruit Juice, Tea=>	Butter, Egg, Milk	32	37	30	2.533784
93.75	Egg, Fruit Juice=>	Butter, Tea	32	37	30	2.533784
93.75	Fruit Juice, Tea=>	Egg, Milk	32	37	30	2.533784
81.08	Butter, Tea=>	Egg, Fruit Juice	37	32	30	2.533784
81.08	Butter, Egg, Milk=>	Fruit Juice, Tea	37	32	30	2.533784
81.08	Egg, Milk=>	Fruit Juice, Tea	37	32	30	2.533784
90.91	Fruit Juice, Milk=>	Butter, Egg, Tea	33	36	30	2.525253
90.91	Fruit Juice, Milk=>	Egg, Tea	33	36	30	2.525253
83.33	Egg, Tea=>	Fruit Juice, Milk	36	33	30	2.525253
83.33	Butter, Egg, Tea=>	Fruit Juice, Milk	36	33	30	2.525253
97.3	Butter, Egg, Milk=>	Tea	37	39	36	2.494802
97.3	Egg, Milk=>	Tea	37	39	36	2.494802
92.31	Tea=>	Butter, Egg, Milk	39	37	36	2.494802
92.31	Tea=>	Egg, Milk	39	37	36	2.494802
96.88	Egg, Fruit Juice=>	Butter, Milk	32	39	31	2.483974
79.49	Butter, Milk=>	Egg, Fruit Juice	39	32	31	2.483974
96.77	Egg, Fruit Juice, Milk=>	Tea	31	39	30	2.48139
96.77	Butter, Egg, Fruit Juice, Milk=>	Tea	31	39	30	2.48139
96.77	Fruit Juice, Milk, Tea=>	Butter, Egg	31	39	30	2.48139
76.92	Tea=>	Butter, Egg, Fruit Juice, Milk	39	31	30	2.48139
76.92	Butter, Egg=>	Fruit Juice, Milk, Tea	39	31	30	2.48139
76.92	Tea=>	Egg, Fruit Juice, Milk	39	31	30	2.48139
93.75	Butter, Egg, Fruit Juice=>	Milk, Tea	32	38	30	2.467105
93.75	Egg, Fruit Juice=>	Milk, Tea	32	38	30	2.467105
78.95	Milk, Tea=>	Butter, Egg, Fruit Juice	38	32	30	2.467105
78.95	Milk, Tea=>	Egg, Fruit Juice	38	32	30	2.467105
91.18	Butter, Fruit Juice=>	Egg, Milk	34	37	31	2.464229
83.78	Egg, Milk=>	Butter, Fruit Juice	37	34	31	2.464229
90.91	Fruit Juice, Milk=>	Butter, Tea	33	37	30	2.457002
81.08	Butter, Tea=>	Fruit Juice, Milk	37	33	30	2.457002
88.24	Butter, Fruit Juice=>	Egg, Milk, Tea	34	36	30	2.45098
88.24	Butter, Fruit Juice=>	Egg, Tea	34	36	30	2.45098
83.33	Egg, Tea=>	Butter, Fruit Juice	36	34	30	2.45098

83.33	Egg, Milk, Tea=>	Butter, Fruit Juice	36	34	30	2.45098
100	Egg, Tea=>	Milk	36	41	36	2.439024
100	Egg, Fruit Juice, Tea=>	Milk	30	41	30	2.439024
100	Butter, Egg, Tea=>	Milk	36	41	36	2.439024
100	Butter, Egg, Fruit Juice, Tea=>	Milk	30	41	30	2.439024
87.8	Milk=>	Egg, Tea	41	36	36	2.439024
87.8	Milk=>	Butter, Egg, Tea	41	36	36	2.439024
73.17	Milk=>	Egg, Fruit Juice, Tea	41	30	30	2.439024
73.17	Milk=>	Butter, Egg, Fruit Juice, Tea	41	30	30	2.439024
94.74	Milk, Tea=>	Butter, Egg	38	39	36	2.42915
92.31	Butter, Egg=>	Milk, Tea	39	38	36	2.42915
93.94	Fruit Juice, Milk=>	Tea	33	39	31	2.408702
93.94	Fruit Juice, Milk=>	Butter, Egg	33	39	31	2.408702
79.49	Tea=>	Fruit Juice, Milk	39	33	31	2.408702
79.49	Butter, Egg=>	Fruit Juice, Milk	39	33	31	2.408702
93.75	Butter, Egg, Fruit Juice=>	Tea	32	39	30	2.403846
93.75	Butter, Fruit Juice, Milk=>	Tea	32	39	30	2.403846
93.75	Fruit Juice, Tea=>	Butter, Egg	32	39	30	2.403846
93.75	Egg, Fruit Juice=>	Tea	32	39	30	2.403846
93.75	Fruit Juice, Tea=>	Butter, Milk	32	39	30	2.403846
76.92	Tea=>	Butter, Fruit Juice, Milk	39	32	30	2.403846
76.92	Tea=>	Butter, Egg, Fruit Juice	39	32	30	2.403846
76.92	Butter, Egg=>	Fruit Juice, Tea	39	32	30	2.403846
76.92	Butter, Milk=>	Fruit Juice, Tea	39	32	30	2.403846
76.92	Tea=>	Egg, Fruit Juice	39	32	30	2.403846
100	Egg, Milk, Tea=>	Butter	36	42	36	2.380952
100	Egg, Milk=>	Butter	37	42	37	2.380952
100	Egg, Fruit Juice, Milk=>	Butter	31	42	31	2.380952
100	Egg, Tea=>	Butter	36	42	36	2.380952
100	Butter, Fruit Juice, Milk, Tea=>	Egg	30	42	30	2.380952
100	Egg, Fruit Juice, Tea=>	Butter	30	42	30	2.380952
100	Egg, Fruit Juice=>	Butter	32	42	32	2.380952
100	Butter, Milk, Tea=>	Egg	36	42	36	2.380952
100	Egg, Fruit Juice, Milk, Tea=>	Butter	30	42	30	2.380952
88.1	Butter=>	Egg, Milk	42	37	37	2.380952
85.71	Butter=>	Egg, Tea	42	36	36	2.380952
85.71	Egg=>	Butter, Milk, Tea	42	36	36	2.380952
85.71	Butter=>	Egg, Milk, Tea	42	36	36	2.380952
76.19	Butter=>	Egg, Fruit Juice	42	32	32	2.380952
73.81	Butter=>	Egg, Fruit Juice, Milk	42	31	31	2.380952
71.43	Butter=>	Egg, Fruit Juice, Milk, Tea	42	30	30	2.380952
71.43	Egg=>	Butter, Fruit Juice, Milk, Tea	42	30	30	2.380952
71.43	Butter=>	Egg, Fruit Juice, Tea	42	30	30	2.380952
97.44	Tea=>	Milk	39	41	38	2.376485
92.68	Milk=>	Tea	41	39	38	2.376485
97.3	Butter, Tea=>	Milk	37	41	36	2.373105
87.8	Milk=>	Butter, Tea	41	37	36	2.373105
92.31	Butter, Egg=>	Tea	39	39	36	2.366864
92.31	Butter, Milk=>	Tea	39	39	36	2.366864
92.31	Tea=>	Butter, Milk	39	39	36	2.366864
92.31	Tea=>	Butter, Egg	39	39	36	2.366864
96.88	Egg, Fruit Juice=>	Milk	32	41	31	2.362805
96.88	Fruit Juice, Tea=>	Milk	32	41	31	2.362805
96.88	Butter, Egg, Fruit Juice=>	Milk	32	41	31	2.362805

75.61	Milk=>	Egg, Fruit Juice	41	32	31	2.362805
75.61	Milk=>	Butter, Egg, Fruit Juice	41	32	31	2.362805
75.61	Milk=>	Fruit Juice, Tea	41	32	31	2.362805
96.77	Butter, Fruit Juice, Tea=>	Milk	31	41	30	2.360346
73.17	Milk=>	Butter, Fruit Juice, Tea	41	31	30	2.360346
91.18	Butter, Fruit Juice=>	Tea	34	39	31	2.337858
79.49	Tea=>	Butter, Fruit Juice	39	34	31	2.337858
88.24	Butter, Fruit Juice=>	Milk, Tea	34	38	30	2.321981
78.95	Milk, Tea=>	Butter, Fruit Juice	38	34	30	2.321981
97.3	Butter, Tea=>	Egg	37	42	36	2.316602
85.71	Egg=>	Butter, Tea	42	37	36	2.316602
94.87	Butter, Egg=>	Milk	39	41	37	2.313946
90.24	Milk=>	Butter, Egg	41	39	37	2.313946
96.97	Fruit Juice, Milk=>	Butter	33	42	32	2.308802
76.19	Butter=>	Fruit Juice, Milk	42	33	32	2.308802
96.88	Fruit Juice, Tea=>	Butter	32	42	31	2.306548
96.88	Butter, Fruit Juice, Milk=>	Egg	32	42	31	2.306548
73.81	Butter=>	Fruit Juice, Tea	42	32	31	2.306548
73.81	Egg=>	Butter, Fruit Juice, Milk	42	32	31	2.306548
96.77	Fruit Juice, Milk, Tea=>	Butter	31	42	30	2.304147
96.77	Butter, Fruit Juice, Tea=>	Egg	31	42	30	2.304147
96.77	Fruit Juice, Milk, Tea=>	Egg	31	42	30	2.304147
71.43	Egg=>	Butter, Fruit Juice, Tea	42	31	30	2.304147
71.43	Butter=>	Fruit Juice, Milk, Tea	42	31	30	2.304147
71.43	Egg=>	Fruit Juice, Milk, Tea	42	31	30	2.304147
94.12	Butter, Fruit Juice=>	Milk	34	41	32	2.295552
78.05	Milk=>	Butter, Fruit Juice	41	34	32	2.295552
95.12	Milk=>	Butter	41	42	39	2.264808
92.86	Butter=>	Milk	42	41	39	2.264808
94.87	Butter, Milk=>	Egg	39	42	37	2.258852
94.87	Tea=>	Butter	39	42	37	2.258852
88.1	Butter=>	Tea	42	39	37	2.258852
88.1	Egg=>	Butter, Milk	42	39	37	2.258852
94.74	Milk, Tea=>	Butter	38	42	36	2.255639
94.74	Milk, Tea=>	Egg	38	42	36	2.255639
85.71	Egg=>	Milk, Tea	42	38	36	2.255639
85.71	Butter=>	Milk, Tea	42	38	36	2.255639
94.12	Butter, Fruit Juice=>	Egg	34	42	32	2.240896
76.19	Egg=>	Butter, Fruit Juice	42	34	32	2.240896
93.94	Fruit Juice, Milk=>	Egg	33	42	31	2.236652
73.81	Egg=>	Fruit Juice, Milk	42	33	31	2.236652
93.75	Fruit Juice, Tea=>	Egg	32	42	30	2.232143
71.43	Egg=>	Fruit Juice, Tea	42	32	30	2.232143
92.86	Egg=>	Butter	42	42	39	2.210884
92.86	Butter=>	Egg	42	42	39	2.210884
92.31	Tea=>	Egg	39	42	36	2.197802
85.71	Egg=>	Tea	42	39	36	2.197802
90.24	Milk=>	Egg	41	42	37	2.148664
88.1	Egg=>	Milk	42	41	37	2.148664
83.78	Egg, Milk=>	Fruit Juice	37	40	31	2.094595
83.78	Butter, Egg, Milk=>	Fruit Juice	37	40	31	2.094595
83.78	Butter, Tea=>	Fruit Juice	37	40	31	2.094595
77.5	Fruit Juice=>	Butter, Egg, Milk	40	37	31	2.094595
77.5	Fruit Juice=>	Butter, Tea	40	37	31	2.094595
77.5	Fruit Juice=>	Egg, Milk	40	37	31	2.094595
83.33	Egg, Milk, Tea=>	Fruit Juice	36	40	30	2.083333
83.33	Butter, Egg, Tea=>	Fruit Juice	36	40	30	2.083333
83.33	Egg, Tea=>	Fruit Juice	36	40	30	2.083333

83.33	Butter, Egg, Milk, Tea=>	Fruit Juice	36	40	30	2.083333
83.33	Butter, Milk, Tea=>	Fruit Juice	36	40	30	2.083333
75	Fruit Juice=>	Butter, Egg, Tea	40	36	30	2.083333
75	Fruit Juice=>	Egg, Tea	40	36	30	2.083333
75	Fruit Juice=>	Egg, Milk, Tea	40	36	30	2.083333
75	Fruit Juice=>	Butter, Egg, Milk, Tea	40	36	30	2.083333
75	Fruit Juice=>	Butter, Milk, Tea	40	36	30	2.083333
82.05	Butter, Egg=>	Fruit Juice	39	40	32	2.051282
82.05	Butter, Milk=>	Fruit Juice	39	40	32	2.051282
82.05	Tea=>	Fruit Juice	39	40	32	2.051282
80	Fruit Juice=>	Butter, Egg	40	39	32	2.051282
80	Fruit Juice=>	Tea	40	39	32	2.051282
80	Fruit Juice=>	Butter, Milk	40	39	32	2.051282
81.58	Milk, Tea=>	Fruit Juice	38	40	31	2.039474
77.5	Fruit Juice=>	Milk, Tea	40	38	31	2.039474
85	Fruit Juice=>	Butter	40	42	34	2.02381
80.95	Butter=>	Fruit Juice	42	40	34	2.02381
82.5	Fruit Juice=>	Milk	40	41	33	2.012195
80.49	Milk=>	Fruit Juice	41	40	33	2.012195
80	Fruit Juice=>	Egg	40	42	32	1.904762
76.19	**Egg=>**	**Fruit Juice**	**42**	**40**	**32**	**1.904762**

Fig: Result obtained by XLMiner:

The Resulted generated by XLMiner created different Rules to suggest Confidence for the products. Here are few Rules which will suggest the Grocery shops/Convenience store owner to put competitive price for product *antecedents (a)* to increase sales of product(s) *consequents(c)*

Rule 1: If item(s) Nappies= is / are purchased, then this implies item(s) Biscuit is / is also purchased. This rule has confidence of 71.43%.

Conf %	Antecedent (a)	Consequent (c)	Su pport(a	Sup port(c
71.4	Nappies=>	Biscuit	14	19

Conclusion:

Information is collected everywhere whenever transaction is happening. If it is used properly then it is like gold mining. The problem is huge amount of data. But if proper tool is used to analyze the data, than it gives fruitful result. XLMiner is one of the tools which can be used to work on huge amount of data.

Giving offer in Biscuits may lead to increase sales of Nappies. It is also suggested to the Shop owner to keep Biscuits and Nappies close to each other. Offer on Egg will increase sales of Fruit Juices, Ready 2 Eat food, Bread. Further investigation from the customer who purchased these item sets together reveal that most of them are either working couples or single who don't get enough time to cook.

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Youth and Unemployment in Nigeria: Implication for Counselling

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Abstract

This study investigated the problems of youth and unemployment in Nigeria. A number of studies were reviewed. Three hypothesis were formulated. The sample comprised 200 subjects randomly selected from both employed and unemployed youths in Owerri Municipality, Imo State. The results indicated that employed youths have higher self-esteem, manifest less tendency to drug abuse as well as criminal behaviour than the unemployed youths. Some counselling implications were highlighted.

Introduction:

In any healthy society, the youths constitute a significant proportion of the population. The standard of their welfare can very much be used as the index of the prosperity of that society. In Nigeria, with an estimated population of one hundred and forty million people, the youths constitute no less than forty percent of the entire population.

Gbosi (2006) defined unemployment as a situation in which people who are willing to work at the prevailing wage rate are unable to find jobs. The International Labour Organization (ILO) defines the unemployed as a member of the economically active population, who are without work but available for and seeking for work, including people who have lost their jobs and those who voluntarily left work. The problem of chronic unemployment is very evident in Nigeria. Every year thousands of graduates are turned out for whom there are no jobs.

Youths are no passive observers on their environments. According to Nwokwule (1990) they perceived its supportiveness and articulate their plans for eventual participation in it as members. On the increase access to education by the youths, Mallum (1988) asserted that whereas the motive of the government in democratising education is social, the youths' perception of the utility value of education is solely as a means to a nice job and better life. The inherent differences in educational objectives between government and youths breeds crisis situation especially for the youths, whose aims are often not realised.

Economy watch (2005) report that unemployment in Nigeria is one of the most critical problems the country is facing. The years of corruption, civil war, military rule and mismanagement have hindered economic growth of the country. Years of negligence and adverse policies have led to the under-utilisation of resources. These resources have not been effectively utilized in order to yield maximum economic benefits. This is one of the primary causes of unemployment in Nigeria. The National Bureau of Statistics (2010:3) showed that as at March 2009 in Nigeria, for persons between ages 15 and 24 years, 41.6% were unemployed. This is pointing to the fact that phenomenon is a very critical issue with far reaching consequences for stability of a nation. The level of unemployment is a mirror image of the state of a nation’s economy. Economic performance of the country has been described as erratic, dismal, truncated and largely unimpressed (Iyoha and Oriskhi 2002, Kayode, 2004; Ekpo, 2008).

The depressed economy resulting from Structural Adjustment Programme (SAP), unbridled exchange of naira and spiral inflation in Nigeria today presents to our youths a sense of hopelessness and helplessness in their job search. This is because depressed economy, according to Nwokwule (1990) results in "depressed career and a vocational moratorium". In essence the consequence of the depressed economic situation in Nigeria is scarcity of jobs, of essential goods and funds.

It is widely accepted that the policy environment for economic growth in Nigeria has not been favourable for many years. Nigeria economic policy environment, particularly in the educational sector, has been characterized by policy inconsistencies, lack of focus, half-hearted implementation, bureaucratic bottlenecks and massive corruption. There is inflation all over. There is heightened job insecurity; there is underemployment at most strata of the economy.

Recognising this trend, Adedibu (1986) claimed that the widespread unemployment and underemployment of youths had reached a crisis situation in Nigeria. Despite the dearth of reliable statistics, one can point to the primary and secondary school graduates as the worst hit. To this, must be added the collosal phenomenon of graduate unemployment. The consequence of prolonged and at times unsuccessful search for ever-elusive jobs on youths include frustration, increased criminal behaviour, drug addiction and prostitution.

This study investigates the effects of unemployment on youths in Owerri Municipality in Imo State, with a view to proffer remedial measures through guidance and counselling.

Related Literature

Unemployment has been a phenomenon which has engaged the attention concerned of scholars for sometime now. Akerele (1977) and Shifron, Dye and Shifron (1983) had defined it as the phenomenon of individuals who are looking for jobs but failing to get any. Beveridge (1981) similarly claimed that it is a condition where there is an individual who is able to work, is wishing to work, is dependent on work to survive but is unable to obtain employment.

The large number of youths who are unemployed is capable of undermining democratic practice as they constitute a serious threat if engaged by the political class for clandestine activities (Adepegba, 2011, Ibrahim 2011; Larley 2011; Olatunji & Abioye, 2011). Unemployment rate in 2011 is 29.3 percent. Nigeria is lagging behind in preparing her workforce for the challenges of the rapidly changing global economy.

Rees (1979) classified unemployment into two basic categories. The first category he called "demand in the economy to provide work for the entire labour force no matter how the labour force is trained" (p.527). The second type of unemployment, as expounded by Shifron et al (1983) is categorised into three, namely frictional (there is problem/friction in the matching process between job seekers and vacancies); Structural (applicant's skill is not the one required in filling the existing vacancies); and seasonal (effect of weather or season of the year). Ipaye (1988) highlighted another type of unemployment peculiar to Nigeria and the third world called "systematic unemployment" in which able-bodied, highly trained labour are "compulsorily retired", 'dismissed'; 'retrenched' or ‘removed’ from work by the Military Regimes" as a way of cleansing/sanitising the society since those affected were deemed to have misbehaved vocationally.

Omotosho, Idowu1, Esere, and Arewah (2009) reported that the unemployment problem in Nigeria grows daily with three million persons, who are primarily youths, moving into the job market each year. Those unemployed include the uneducated and rural populations but also include highly educated populations. This leads to continuing poverty in the country. Osalor (2012) reported that the problem of youth unemployment has not been resolved and youths in Nigeria are more agitated than ever which has led to crime and the destruction of property and persons.

Youths in Nigeria such as in the Niger Delta region use whatever means available to try and make their living conditions and sufferings known. As noted by Obata (2012), it is time for the government to take action and deal with the problem of unemployed youths in Nigeria. Counseling of these youths offers one possible solution (Badejo, Stephens, & Anyanwu, 2011; Omotosho1 et al., 2009).

Rotimi (2012) reported on youth unemployment and insecurity in Nigeria. This author stated that high rates of unemployment lead to social insecurity, political violence, and crime and it is the unemployed youths who make up the active groups involved in these issues. The increasing rates of crimes and terrorism that have taken place in Nigeria, may be connected with high rates of youth unemployment. Over 90 million youths or 56% of youths in Nigeria are unemployed. Reasons for this include ineffective mechanisms to deal with this unemployment. The education system is dysfunctional regarding curricula, skills, and apprenticeships. Kolawole (2012) reported further that government and private sectors need to generate more than 2.5 million jobs each year since around 60% of Nigerian graduates are unemployed.Dike (2009) lamented that Nigeria is lagging behind in preparing her workforce

for the challenges of the rapidly changing global economy. It is of note that Nigerian graduates are not employable and therefore do not possess the skills needed by the employer of labour for a formal employment. A large mismatch appears to exist between the labour market demand and the labour output.

Edukugho (2012) reported that youth unemployment in Nigeria threatens national security and undermines the nation's goal of becoming a leading economy in the world. To add to the problem of unemployment, the government spends N960 billion each year on artisans from abroad to work in Nigeria and the Nigerian education system prepares graduates for employment in a market that is over-saturated. The unemployment situation is increasingly worse and thousands of graduates join others who roam the streets looking for employment.

On the effect of unemployment on youth, Nwoye (1991) claimed that it prolongs adolescents' dependence on parents, especially for financial support. Nwadinigwe (1992) study concluded that unemployed youths are negative about life and living, and are very much pent-up against society which spent so much to train them but abandon them with no provision to seek a living. Such unemployed youths, not being sure of today, become extremely more doubtful, negative and hopeless about their future. Ipaye (1988) opined that unemployment aggravates delinquent culture and serves as baptism into crime, drug abuse, prostitution and other nefarious activities.

Belatedly Akpan (1988) study found that employed youths significantly have higher self concept, self esteem and internal locus of control than the unemployed youths. Adedibu (1986) similarly found a positively significant relationship between unemployment and criminal behaviour.

Alanana (2003) reported on the need to deal with high rates of youth unemployment in Nigeria. It was recommended that a Work Incentive Programme (WIN) be established by the Nigerian State, similar to what takes place in America.

Problem

Unemployment in Nigeria has reached a crisis situation. Daily millions of unemployed youths roam the streets searching for non-existent jobs. Even where the jobs are advertised, the tall requirement of by employers most of the time portrays the skill acquired by the applicant as inadequate hence dimming his chances of gainful employment. The consequence of unemployment on youth include frustration, hostily, low self esteem and low self concept. Some of the youths "grudgingly" gravitate towards drug pushing, criminal behaviours, prostitution and other nefarious activities. It is in the quest to identify the effects of unemployment and profer remedies to the problems that this research was embarked upon.

Research Hypotheses

The hypotheses formulated and tested in this study were:

1. Employed youths significantly have higher self-esteem than the unemployed youths.
2. Employed youths have significantly less tendency towards drug abuse than the unemployed youths.
3. Unemployed youths have significantly higher tendency towards criminal behaviours than the employed youths.

Methodology

This is primarily a survey study. The population of youths in Owerri Municipality were stratified into employed and unemployed. Simple random sampling technique was used to select 100 unemployed youths from those registered with the National Directorate of Employment, Owerri. Similarly 100 employed youths were randomly selected from Imo State Government Civil Service 1994 recruitment list. Consequently, the sample comprised 200 youths made up of 100 employed and 100 unemployed youths.

Instrumentation

The instrument was a researcher-constructed questionnaire on the effect of unemployment on youths. It measures dimensions of unemployment effects, notably self concept, validity of this instrument was done through pilot testing and reliability co-efficient obtained ranged between 0.78 and 0.94 using Pearson Correlation Co-efficients.

Administration

The instrument was administered personally by the researcher to the 100, unemployed youths on group basis with the help of the National Directorate of Employment Officials who invited the subjects for the purpose. The researcher also administered the instrument to the employed youths individually in their different offices after obtaining the consent of their immediate bosses in the office. By this method the 200 questionnaire administered were returned correctly filed and used for analysis.

The scoring of the instrument was done according to the dimension of effect of employment on youths. Each positively worded statement was scored 4 points for strongly agree and 1 point of strongly disagree. The total of all scores in each variable affecting unemployment constitute manifest effect of unemployment on the, respondent, hence used for analysis.

Method Of Data Analysis

Data was analysed using the mean (x) scores, standard deviation and independent t-test statistics.

Results

The first null hypothesis states that employed youths do not significantly have higher self esteem than the unemployed youths. The results of the analysis is presented in Table 1.

Table V: Independent T-Test Analysis On Difference In Self-Esteem Between Employed And Unemployed Youths.

Status	N	X	Sd	t-value
Employed	100	31.54	5.84	
Unemployed	100	29.20	6.69	2.63*
Total	200	30.63	6.15	

*Significant at .05; df = 198; critical t = 1.65

Table 1 showed that significant difference in self-esteem exist between employed and unemployed youths since the calculated t-value of 2.63 was greater than the critical t-value of 1.65 given 198 degrees of freedom at .05 level of significance. The higher mean (X) score for employed youths as against the unemployed ones implies that employed youths have significantly higher self-esteem than the unemployed ones. The research hypothesis was supported.

The second null hypothesis states that employed youths do not significantly have less tendency towards drug abuse than the unemployed youths. The result is presented in Table 2

Table 2: Independent T-Test Analysis On *Difference In* Tendency Towards Drug Abuse Between Employed And Unemployed Youths.

Group	n	X	Sd	t-value
Employed	100	42.92	11.05	
Unemployed	100	41.20	9.74	1.21
Total	200	41.87	10.56	

P> .05; df = 198; critical t = 1.65

Table 2 shows that no significant difference in tendency towards drug abuse exist between employed and unemployed youths, ($t = 1.21$ $df = 198$, $p > .05$). The null hypothesis was retained.

The third hypothesis states that unemployed youths do not significantly have higher tendency towards criminal behaviours than the employed youths. The result is presented in Table 3.

Table 3: Independent T-Test Analysis Of Tendency To Commit Crime Between Employed And Unemployed Youths

Group	n	X	Sd	t-value
Employed	100	16.34	3.74	2.25*
Unemployed	100	15.07	4.23	
Total	200	15.69	4.01	

*Significant at .05; df = 1 98; critical t = 1.65.

Table 3 shows that a significant difference exists between employed and unemployed youths in tendency towards criminal behaviours ($t = 2.25$, $df = 198$, $p < .05$). With the higher mean (x) score of the unemployed as against the employed on the variable, it follows that the unemployed youths have higher tendency towards criminal behaviours than the employed youths. The research hypothesis was supported.

Discussions

The result of the first hypothesis showed that employed youths have higher self-esteem than those who were not employed. This finding supports Mitchell (1972) study which concluded that jobless people have lower self-concept, self-esteem and have generally negative perception of events and activities around them than the employed. Similarly Akpan (1988), Rotters (1988), Buletza (1987) and Herbet (1977) concluded that employed youths have significantly higher self-esteem than unemployed youths. The reason for the finding may be traced to the fact that being unemployed makes the individual to be economically dependent on others, emotionally unstable and perceiving events negatively.

On the insignificant difference in tendency towards drug abuse found between employed and unemployed youths, the finding is interesting. This is because one would have expected the unemployed who are emotionally, psychologically, economically and socially not as stable as those who are employed to rely on drug as a way of cushioning the weight of unemployment on them but this was not so; it follows that attraction to drug abuse may not necessarily be due to employment status but may be due to peer pressure and as a palliative to identity crisis generally bothering the youths, hence the finding.

The result of the third hypothesis showed that unemployed youths significantly have higher tendency towards criminal behaviour than the employed youths. This finding is not surprising. This is in line with Nwokules (1990) study which claimed that the unemployed vent their anger and frustration on the society by engaging in crime-related activities. Similarly, Adedibu (1986) and Johnson (1964) highlighted increased crime wave like armed robbery, drug trafficking and stealing as the effects of unemployed on youths. While agreeing with the scholars it is also possible that the unmitigated quest for materialism in the society today pressurises some of the unemployed towards behaviours aimed at attracting finance to themselves, even if illegally. Since the unemployed feels betrayed by the society, he may have not felt guilty in manifesting criminal behaviour.

Implications for Counselling

Appraisal of unemployment trend in Nigeria today, from the counselors perspective, shows that it can mainly be categorised as either frictional o structural in nature. There is need to have different stages and approaches in counselling the unemployed. The selection of any particular strategy or approach depends on individual situations. This is because there are some of the unemployed who need employment counselling (Onyejiaku, 1987) while there are others who may only need guidance in respect of information provision to enhance self awareness, self understanding and career awareness requirement and prospects.

Omotosho1 et al. (2009) reported on the counseling needs of the Nigerian youth. These authors noted that youth unemployment is not a new issue, but it is an unresolved problem. A study was conducted to investigate the problems and counseling needs of unemployed youths in Nigeria. A sample was selected from 1,750 unemployed youths between the ages of 21-31 years. Participants were surveyed with the Problems and Counseling Needs of Unemployed Youths Questionnaire. Results showed that these youths had problems with finance, family and health-related needs, and socio-psychological issues along with counseling needs to develop marketable skills. The authors concluded that greater emphasis must be placed on the planning and implementing of counseling services to help unemployed youths in Nigeria.

Badejo, Stephens, and Anyanwu (2011) reported further on the counseling needs of Nigerian unemployed youths. These authors studied these counseling needs within the current political situation. The study included Nigerian youths between the ages of 18-35 years. A descriptive survey, the Counseling Needs of Nigerian Youths Questionnaire, was used to gather data from 500 youths from Lagos State. Findings confirmed the need for all government levels in Nigeria to employ the services of counselors to develop policies for these youths.

As noted by Omotosho1 et al. (2009), the unemployed Nigerian youths have many problems. Counseling is needed to help ensure that these youths do not turn to drugs, alcohol, or other destructive coping strategies to deal with these problems.

Effective counselling strategy necessarily has to be anchored on individual counselling interview with unemployed persons where the counsellor uses test and non-test instruments to diagnose unemployed persons particular situation, raise his self awareness and understanding, highlight his assets and liabilities, increase his awareness of job situation and requirements and help make the unemployed identify particular goal or solution to his problem.

Counsellors should recognise the relevance of and seek cooperation with Government Organizations like National Manpower Board and National Directorate of Employment to be abreast of government employment policy, skill development and training programmes and national skill exchange programmes. Information derived from such agencies will enrich the employment counselling service he will provide to the unemployed.

There is a need for a counsellor to beef up his job information kit if he wants to provide relevant service to the fictionally unemployed youths. This could be achieved by scouting for job openings at the local, state and Federal Government levels and recording and updating them to make the information current (Ipaje, 1988). The emergence of private job employment agencies is a good development in the employment scene. Counsellors should liaise with such agencies as well as companies, industries and business concerns to be fed with information respecting job openings. This will correspondingly be relayed to the clients.

Unemployed youths need to be guided by counselors to deal with stress, make career choices, and develop skills needed to find employment. Vocational courses at all levels of the Nigerian educational system as well as work-study programs, with counselor guidance, are needed to help these youths.

Youths need to link classroom experiences with the work world. This is needed to help those youths being educated in theory only. Omotosho1 et al. stated that there must be an increased emphasis and focus on the counseling needs of unemployed youths in Nigeria.

It is noticed that many potentially good employees stay unemployed due to poor skills in job interview technique. Counsellors, whether in school or non-school setting, should provide clients either in group or individually, with knowledge of how to attend interviews and writing of job resume.

With respect to those in structural unemployment category, counselling should be keyed towards re-empowerment of relevant and required skills through retraining. Counsellors need the job training programme schedule from National Directorate of Employment, Federal Ministry of Labour, Employment and productivity and information from companies or cooperations requiring provision of training facilities for would-be employees. Clients could then make choices based on such knowledge.

There is a need for administration of vocational interest and/or motivational tests to help clients identify their vocational trend, as they prepare for vocational retraining. This will help guide against occupational frustration in future.

These intervention strategies may be relevant to all unemployed person either in seasonal category or those retrenched or "retired" involuntarily from their work place.

It is generally noted that most of the unemployed persons have poor self-esteem, are frustrated and anxious as a result of their situation (Nwadinigwe, 1988). It is necessary to counsel the unemployed towards reduced state of anxiety and frustration and reempower them to improve their self-esteem. This is achieved through making them accept and accommodate their condition readily, to be more hopeful and energetic about finding employment and compromise ideals by even taking to substitute employment. Rational Emotive Techniques is appropriate to achieve this objective.

State of insecurity felt by the unemployed person is also occasioned by attitude of parents and relations to the unemployed. Counselling strategy will include family counselling to elicit cooperation, support and understanding from the parents to make the unemployed wade through his problem.

Again counselling is necessarily to be keyed towards encouraging those who will like to be self employed to achieve their objective. They could be helped to appraise how to over-come initial difficulties in starting their business - like how to raise capital, choice of viable business to do; and how to generally manage the business concern to minimise losses and risks. Group counselling and individual counselling as well as the use of mass media is relevant to achieve this aim.

Literature findings support the conclusion that unemployment of Nigerian youths remains a problem. This unresolved problem leads to desperate measures. Counseling for these youths would help deal with the needs and issues faced by this population. Counseling with courses and work experience is needed to ensure that these youths develop marketable skills and are able to successfully enter the work world.

Finally counsellors should not be unconcerned with the relative irrelevance of the school curriculum which has reduced the relevance of certificates of our graduates hence fueling unemployment. There is a need to review school curriculum at all stages of our educational system so as to emphasis more and prioritise areas of needs in the society. Counsellors should' champion the need for this change, knowing full well that relevant

educational programme emphasises occupational development/aspiration and reduces unemployment rate in any society. This is what Nigeria needs now.

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Socio-Demographic Characteristics of Cocoa Farmers and Cocoa Production in Etung and Ikom Local Government Areas of Cross River State, Nigeria

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Abstract

There is a seeming agreement among scholars that the efficiency, effectiveness and productivity of rural farming depend to a large extent on a number of socio-economic indices. These indices or characteristics includes among other things, the level of education, the age structure of the farmers, level of income, sex, marital status and religion. This Study empirically examines these socio-demographic characteristics against the background of cocoa farming in Etung and Ikom Local Government Areas of Cross River State. The findings revealed that the indices identified have a strong positive correlation with cocoa production. Based on the findings, we then recommended that government could assist in improving cocoa production in the area, by providing the necessary social infrastructure (road, electricity, water, health) and other incentives that would draw younger people into cocoa farming. Also within the context of paradigm shift, government should carry out massive enlightenment campaigns and assist women to take to cash crop farming in order to improve on their well being because development cannot be development if the welfare of women is not taken care of also.

Keywords: Socio-demographic, cocoa farmers, rural farming, production.

1. Introduction

Cocoa production and or farming in Nigeria could be traced to 1874, and in 1890, the country recorded its first export of 0.304 tons (Ayorinde, 1966). From this humble beginning, cocoa production and farming witnessed a steady increase in term of farming, production and export. The rise in production in the first three decades came through the combined efforts of individual pioneering cocoa farmers. The concentration was however, in the old western region (now Oyo, Ondo, Osun, Ekiti and Lagos States) (Ering, 2010 and 2006).

The experiences of the western region of Nigeria where cocoa farming helped in the socio-economic transformation of farmers and the economy of the region, found a reverberating experience in Etung and Ikom Local Government Areas of Cross River State. These experiences have underscored the contention of a number of scholars (Ering, 2010; Todaro, 2008; Mountjoy, 1975; Moshuer, 1972) all of whom have argued that economic development does not depend on capital alone, although it is a necessary factor, development demands and produces far reaching social changes in societies; the fabric of social life becomes altered, social attitudes change. More than anything else, it is the human factor that is most underdeveloped, and it is upon improvement in the quality and condition of the human factor that in the first instance, development depends. Development means improving the living conditions of rural areas through increase production in agriculture and related enterprises such as the production of cocoa. It has to do with transforming the rural landscape in terms of the opening of rural feeder roads, availability and accessibility of health facilities and education, providing portable water and raising the levels of living particularly in the area of incomes.

In Nigeria, governments (federal, state and local) have come up with different policies and programmes all in an attempt to develop the rural areas. The emphasis of these policies have been on agricultural development and industrialization, that is, on the cultivation of such cash crops as palm produce, rubber, groundnuts, cocoa and others. It has to do with the establishment of agro-allied industries in order to use the by-products of the cash crops mentioned above.

In spite of these government policies and programmes in developing the agricultural sector and specifically cash crop development, real efforts in actualizing these noble ideas have been thwarted by corruption and other bureaucratic bottlenecks. This is even so when it is realized that meaningful industrial development depends to a large extent on cash crop production (Todaro, 2008; Ering, 2006; and Mountjoy, 1975, Mabogunje, 2008). The argument here is that, efforts to develop the industrial sector must rely upon increased agricultural productivity, not only in supplying agro-allied raw materials but also in feeding the increasing population and the growing urban-industrial population.

More so, against the backdrop of the growing food insecurity and increasing food prices, increase agricultural productivity will reduce the massive food importation by developing countries (Nigeria, inclusive); and where possible provide surpluses for export and earning of foreign exchange. Above all, increase productivity will increase farm incomes, and create an expanding market for new industries or agro-allied industries.

In Cross River State and specifically Etung and Ikom Local Government Areas of Cross River State, rural farmers are engaged massively in cocoa production. This study examines the socio-demographic characteristics of these cocoa farmers and their implication for increased cocoa production in the State.

2. Method and materials

This study was essentially an empirical research, and the design adopted was the descriptive research design. The design was favoured among a variety of other good designs because of the ability to capture the diverse characteristics of the respondents that were considered for the study. Best (1970) has argued that the descriptive design help to establish conditions or relations that exist, practices that prevail, beliefs points of view and attitudes that are held, processes on going, effects that are felt or are developing. The design allows for extensive use of survey method for collecting data.

Therefore, the survey method adopted involved selecting for study, the two local government areas that are major cocoa producing areas in the state – Etung and Ikom, out of seven other cocoa producing local government areas, namely, Akamkpa, Obubra, Boki, Ogoja, Obudu, Biase, and Obanliku. From Etung and Ikom Local Government Areas two communities were selected, Ikom town and Akparabong from Ikom Local Government Area and Etomi and Bendeghe – Ekim from Etung Local Government Area. Also from each of these communities, 50 respondents were purposive selected, making a total of 200 respondents. The sample size of 200 was drawn by balloting, and sample without replacement method was used to draw the sample size. The methodology was adopted as a logical approach to the administration and collection of data, which enhanced the analysis of the problem under study.

3. Theoretical exposition

Cocoa as a cash crop has made important contribution to the socio-economic development of rural areas especially in western Nigeria, the cocoa growing areas of Ghana, and Cote d'Ivoire. Researches have shown that workers of the old western region (now Oyo, Ogun, Osun, Ekiti and Ondo States) which essentially are areas where cocoa is grown were one of the highest paid in the country during the pre-independence and early independence era when there was boom in cocoa production, (Ering, et al, 2006, Ajobo, 1985; Jacob, 1972; Adegbola, 1972 and Iloeje, 1971). Also, Jacob (1972) report supports the contention above that cocoa constituted the back-bone of the economies of states of western Nigeria, at least for over ten decades before the prospects of its contribution to the economy were seriously threatened in the 70s.

Similarly, Jacob (CRIN, 1972) also argued that cocoa contributed a fair share to the economic welfare of western Nigeria between the 50s and 60s. The contribution of cocoa to the trading surpluses of western states was much and these were utilized for various developmental programmes. Development or change in the society therefore could result if the agricultural sector is vigorously improved. For instance, proceeds from cocoa production made it possible for the government of the old western region to sustain the minimum wage of workers which was doubled by 100 per cent in 1954 (Forde and Scott, 1954; Galletti, 1956). Also, the western region's bold policies of free education, free health services, establishment of industrial estates, integrated rural development programmes which all required massive financial support were made possible by cocoa money. There was then the magnificent Cocoa House building, one of the first high rise buildings in the country as a symbol of cocoa's eminent contribution to the economy. (Ering, Nwagbara and Duru, 2010).

Frawley and Phelan (2002), have maintained that though the contribution of agriculture to national wealth and viability of rural areas is significant, it is clear that the sector is in a state of flux. The increasing numbers of part-time farmers was one of the principal structural changes in the 1990s.

Also, (Long 1977; McClelland, 1961) have contended that some degree of achievement orientation or ambition for personal betterment and for the acquisition of education and skills or

the right type of socialization must exist in social factors. These attitudes they claim will later be diffused more widely in the society and help to sustain economic growth.

Jinghan (2006) argues that a rise in rural purchasing power as a result of the increased agricultural surplus is a great stimulus to industrial development. Moreso, agriculture helps to expand and diversify employment opportunities in rural areas. As agricultural productivity and farm income increase, non-farm employment expands and diversifies.

Agbor (2004) maintains that the agricultural sector if revolutionized could act as a catalyst for the industrial development of Cross River State and the country as a whole. For him, some development economists have argued that the best approach to developing the industrial sector particularly in Third World societies where more than seventy-five percent of the population is engaged in agriculture, is to first of all develop the agricultural sector because agriculture provides the raw materials needed by industries and specifically agro-allied industries. And in turn increase agricultural incomes would exacerbate the demand for manufactured goods.

The study was essentially anchored on two theoretical models which help guide the study. First, the Demography Transition Theory (DIT) which has been modified and adapted in examining the socio-demographic situation in Etung and Ikom cocoa producers or farmers. Conventional transition theory focuses on the fertility-mortality interaction as it impacts on the population dynamics of society at different epochs of development (Jhingah, Bhatt and Desai, 2006). The theory explains the adoption of new smaller family ideal by reference to the industrial and urban transformations of the 19th Century. Industrial and urban lives are seen as modifying substantially the role of the family in production, consumption, education and recreation. The reduced importance of the family weakens the social pressures favouring high fertility, since it is through the extended agrarian family that many of these pressure are funded by the society. The economic value of children is covered by the growth of widespread or compulsory education which removes children (young population) from the potential labour force.

Although the theory has been severely criticized for de-emphasising migration and for being less relevant in explaining population change in the 21st century Africa, the Demographic Transition Theory (DIT) serves as the threshold upon which some other perspectives thrived. In Etung and Ikom rural cocoa communities the increasing craze for western education and its attendant benefits of seeking for jobs outside the agricultural sector have unsettled the population dynamics in the area. This has tended to remove younger people from the potential labour force. Also, the quest for western education has led to a delay in reproductive behaviour among the young people which is usually associated with late marriages which in turn affects the occurrence of pregnancy (Nwokocha, 2012).

The second is Weiner's (1966) Change as Enactment of Values model of development. The theory notes that for many scholars, the starting point of any definition of development is not the character of the society but the character of the individuals. He observes that attitudinal and value changes are the prerequisite to creating a modern society, economy and institutions. Unlike other theoretical models, this model is essentially explanatory. The search in this case is for those "mental viruses" (McClelland, 1970; "changing the spirit" lnkeles, 1969), of men that they come to adopt and promote a modern society. The value-enactment model perhaps best describes the changes that are taking place among Ikom and Etung cocoa farmers and consequently rural communities (Ering, Nwagbara and Duru 2010). The values attached to achievement and attitudinal change has made many cocoa farmers to improve on their level of education and in other significant ways.

Though critics have noted that the theory neglected international economic and political linkages, our argument is that the model has provided some explanations as to why in Etung and Ikom communities, most of the farmers have attained some level of education. It also shows that cocoa farming is no longer the business or function of persons who had no formal education but that the highly educated (civil servants and members of the political class) are also engaged in its cultivation.

Also, Ogunfiditimi (1980) and Ajobo (1977) have both argued that in western Nigeria cocoa is mainly a male crop, where the male play a dominant role in its production while women play a supportive role. This argument is supported by Fadipe (1970) and Redding (2002) who maintain that agricultural production in Africa is gendered with the men playing a key role in production.

4. Results and discussion

The questionnaires were administered to 200 respondents, drawn from Etung and Ikom cocoa producing communities of Cross River State. Specifically, the respondents were made up of farmers, civil servants and businessmen/traders, indigene and non indigene and other socio-demographic variables. The analysis and discussion therefore will take the entire characteristics into consideration and their implications for increased cocoa production and the socio-economic development of rural economy. These will be done using simple percentages and with the aid of tables to reinforce the argument raised.

4.1 Socio-demographic characteristics of respondent

Results from the study show that cocoa production has affected positively the lives of farmers engaged in its production. Specifically, the socio-demographic characteristics of the respondents (sex, age, marital status, education, religion) are displayed in tables 1 to 5 respectively and these revealed interesting outcomes.

Table 1: Distribution of respondents by sex

Sex	No. of respondents	
	Frequency	**Percent**
Male	133	66.05
Female	67	33.05
Total	**200**	**100.00**

Table 1 shows that major cocoa farming activities are undertaken more by males. The distribution of respondents by sex indicates 66.05 per cent and 33.05 per cent for male and female respectively. These findings agree with the contention of Ogunfiditimi (1980) and Ajobo (1977) that males are more into cocoa farming than females. The reason for this is not far fetched, in rural communities of Etung and Ikom Local Government Areas, large scale farming activities especially those that involve much labour are performed traditionally by males (Patal and Antonio, 1971). Cocoa being a high labour demanding crop is mostly grown by males.

Also, Fadipe (1970) and Redding (2002) have maintained that in much of Africa, agricultural production is gendered to the extent that when men farm, they often farm

principally for the market. In other words, they are selling most of their crops for the market, whereas when women farm, they farm principally for household consumption and then either market the surplus or grow a specific crop on the side to be marketed. However, this trend is fast changing as a few women are also into cash crop production.

Table 2: Age distribution of the respondents

Age	Respondent responses	
	Frequency	**Percent**
21 – 30	60	30.00
31 – 40	85	42.50
41 – 50	37	18.50
50 and above	18	9.0
Total	**200**	**100.00**

Data in table 2 show that cocoa farmers are persons between the ages of 31 and 40 years, with 42.50 percent, while very few farmers were well over 50 years. The implication of the dominance of persons within the age bracket of 31 and 40 is that farming activity is particularly taken by persons who are still very active. This finding agrees with Frawley and Phelan (2003) contention that the most significant demographic change in the 1990s was the substantial reduction in the number of farmers over the age of 65 years. Cocoa farming provides reasonable and steady income that enables people to build houses, take wives, pay school fees, buy cars and other electronic gadget and modern equipment in rural areas of Ikom and Etung local government area of Cross River State. Civil service jobs have become unfashionable especially against the backdrop of low income, irregular payment of salaries and the rate of inflation in the country. These factors have made persons within these two local government areas to fall back to cocoa production as the major source of sustenance and development.

Table 3: Percentage distribution of the educational levels of respondents

Level of education	Cocoa farmer	
	Frequency	**Percent**
Non-formal education	10	5
Primary school education	36	18
Secondary education	10	50.50
Post secondary education (Polytechnic, college of education, college of agriculture and universities)	53	26.50

Total	**200**	**100.00**

Table 3 show that cocoa farming is not a function of those who have not attained any form of education. A greater percentage 50.50 percent have attained secondary education and another significant percentage are persons with post secondary education, represented by 26.50 per cent. The implication of this is that more educated persons are now favourably disposed to farming. This finding is in consonant with the findings of Subair and Adedoyin (1988) which found that formally educated persons are into farming. The reasons however are that civil service jobs have lost the appeal of most educated persons, as salaries are unattractive, irregular and cannot be depended upon for sustenance. Moreover, additional income from farming helps to complement salaries that are irregular.

According to Frawley, and Phelan (2002), the contribution of part-time farming to maintenance of farm families in the local communities had had a positive effect on rural development. In the foreseeable future the option of an off-farm job will most likely be the most effective way for low income farmers to supplement farm incomes. However, studies have shown that part-time farmers are becoming a heterogeneous category ranging from hobby farmers and "investor" to those where farming is the main occupation. This is the situation among Ikom and Etung cocoa farmers, where a number of them are either "investor" farmers or "civil servants" who are engaged in cocoa production or farming.

Table 4: Distribution of respondent by marital status

Marital status	**Cocoa farmer**	
	Frequency	**Percent**
Single	71	35.50
Married	119	59.50
Separated	10	5
Total	**200**	**100.00**

Data in table 4 show that majority of the farmers in the sample are married. This account for why this group needed to grow cocoa, which is a cash crop so as to be able to meet the financial requirements of their families. Moreso, the job of cocoa processing and weeding are activities traditionally meant for women and specifically more of women who are suppose to help their husbands in this regard.

Table 5: Percentage distribution of the respondents by religious affiliation

Religious affiliation	**Cocoa farmer**	
	Frequency	**Percent**
Christianity	126	63.00
Islam	-	-
Traditional religion	74	37.00
Total	**200**	**100.00**

Data in table 5, show that majority of the cocoa farmers are Christians. Percentage distribution shows that 63 per cent are Christians while 37 per cent are traditional worshippers. This confirms the fact that the people of Ikom and Etung local government areas are predominantly Christians. One vital point that could be advanced here is that early Christians first grew cocoa in the area in 1920s (Berry, 1975). This fact may have stimulated more Christian into farming and particularly cocoa farming than their Muslim counterparts. It must be mentioned here however, that traditionalist (those who worship traditional religion) most of them mixed traditional worship with Christianity and may account for the high per cent of farmers who are Christians in the area.

Table 6: Distribution of respondents by state of origin

State of origin	Cocoa farming	
	Frequency	**Percent**
Cross River	171	85.50
Akwa Ibom	10	5.00
Ebonyi	9	4.50
Abia	3	1.50
Others (Benue, Enugu, Oyo, Ondo)	7	3.50
Total	**200**	**100.00**

Table 6 shows that Cross Riverian of Ikom and Etung extraction form the major percentage of the sample of study, that is, 85.50 per cent. Other ethnic nationalities also made up the sample. The implication of this is that cocoa farming or production and incomes derived from it have led to an influx of migrant farmers into the two local government areas. Such migrant's workers come from states and other areas like Akwa Ibom, Ebonyi, Abia, Benue, Enugu, Oyo and Ondo and also other local government areas of the states where cocoa is not cultivated. This factor has influenced the population growth of Ikom and Etung urban and rural areas and the level of economic activities in the area. Cocoa production has created employment opportunities for young school leavers and others in the society, with many working either as buying agents, farm workers, or engaged in the processing of cocoa beans.

5. Policy implications

The study and its findings have provided the basis to make the following recommendations.

i. Government should re-introduce farm settling schemes in all established cocoa plantations and other allied plantations (rubber, palm etc). The findings revealed too that farmers who have some formal education tend to live far away from where their farms are situated when compared to their counterparts who have little or no formal education. The implication of this phenomenon is that farmers who are educated are not favourably, inclined to living in rural areas may be because of the lack of basic social amenities and facilities. This explains the emergence of a new crop of farmers called "absentee-city based farmers". Therefore, some sort of integrated rural development programme need to be pursued so as to provide some

social amenities (water, road, electricity, health facilities) that could make them attracted to live in rural areas where they have their farms. This measure would help in enhancing the effective management and supervision of their framers for increased productivity. Furthermore, agricultural extension officers with expertise on cocoa management should be sent to educate farmers on the new specie and management.

ii. Government should carry out massive enlightenment campaign and also assist women to take to cash crop farming. The findings have revealed that males are more into cash crop farming than females. This is an indication that, unlike in food crop farming, where females have been found to be very active by Boseryp (1970); UNESA/FAO (1975; FAO (1985) and Olawoye (1988), females are yet to demonstrate their ability to manage effectively cash crop farms on their own. However, women's role in cash crop processing and marketing has been found to be significant (Williams, 1984; Longe, 1988). Within the context of the new development paradigm and thinking, efforts should be made to encourage females to participate in cash crop farming so as to improve their socio-economic well being and status. This is especially so because cash crop farming tend to fetch more money than arable crop farming where they have distinguished themselves. Government could provide incentives and improve high yielding cash crop (cocoa) varieties to enhance this strategy.

iii. The findings of the study suggest the need for the establishment of cooperative cocoa processing plants in order to ease the problem of cocoa processing. The research shows that farmers carry out all the processing operations relating to their crop: pod breaking, fermentation, drying and sometimes transport to the buyers. This has many disadvantages:

a) The labour used for these operations would have been used more profitably for harvesting.

b) Fermentation difficulties crop in even with small lot especially during the light crop period which coincides with the rainy season.

c) Difficulties in drying during the light crop period.

d) The heterogeneous nature of different lots of beans, as each farmer operates under different conditions, and

e) Results in the total loss of by product (cocoa beans).

The minimal rural market and the traditional hold on land inhibit extensive acquisition of land for increased planning of new cocoa farms, even if the individual has some funds for its development. In order to alleviate this problem of land fragmentation brought about by land inheritance, government should vigorously pursue the 1978 Land Use Act which suggested public acquisition of land by government, and of course a complete revision of a number of ambiguities that have bedeviled the Land Use Act, Ering (2005).

A considerable proportion of the existing cocoa trees have long passed the economic life of this crop which is put at about 30 years, this leads to declining productivity. There is need to encourage farmers in replanting and the establishment of new farms. This should be done by introducing high yielding, disease resistant, and fast yielding varieties of cocoa. Government could give farmers incentives such as uprooting bonuses at rates fixe by

government per each tree uprooted. This would go along way in making a good number of farmers who are not ready to engage in the replanting exercise to do so.

6. Conclusion

The study has been very exciting particularly as it examines the socio-demographic characteristics of cocoa farming. The findings have shown that these characteristics have considerable implications for cocoa production in Etung and Ikom rural communities. More so, the interplay of socio-demographic and socio-economic forces have increased the momentum of economic activities in the local government of study

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Urban Growth in an Administrative City: A Case Study of Akure, Nigeria

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Abstract

Decision makers require up-to-date and accurate information in taking precise and beneficial decisions about our environment. Spatial information technologies such as Geographic Information System (GIS) and Remote Sensing (RS) have changed the way decisions are taken in relation to our environment. In Nigeria, especially in the study area, information about land-use/land-cover, rate of urban expansion, land-use change, location and extent of natural resources and hazard-prone areas, among others, are not available, where available, they are not precise. Up-to-date information is required to assist decision makers in tackling the problems arising from urban expansion, population explosion and land use changes among others. In this study, the capability of GIS and RS technologies has been explored to generate, land-use/land-cover maps; extent of urban expansion within the study period; land-use change charts and tables and direction of urban growth among others. These products have supplied accurate and useful information that could assist decision makers in taking rational decisions about the environment in order to ensure sustainable living. In our opinion, the information provided by these technologies can significantly improve strategic spatial decision-making processes in our urban centers worldwide.

Keywords: land-use, land-cover, urban growth, Geographic Information System, Remote Sensing, Akure, Nigeria.

1 Introduction

The word is becoming increasingly urbanized. It was observed that 49.5 percent of the third world countries lived in urban areas. By 2005, the United Nations projects a further tripling 65%, at which point nearly two-thirds of the citizens of the developing world will live in cities (The world Bank, 1997). This statement shows that growth will always be evident in most cities. This effect in most cities has been driven by a number of political, economic and social (population) forces has been closely associated with emerging inequality in the distribution of wealth produced in communities and nationwide.

It is believed that the rapid population growth and the subsequent expansion of African cities are fueled by high population growth and rural-to-urban migration, the latter of which accounts for between 40 to 60% of the annual urban population growth in Africa. The rural-to-urban migration is often fueled by prospects of jobs, higher incomes and higher standard of living. As a consequence of their colonial legacy, many African cities still remain administrative centers and they also serve simultaneously a national and regional engine of economic growth. On the other hand, people are pushed out of rural areas by poverty, lack of opportunities, declining agricultural related work, war and famine (Lipton, 1971).

Due to this dynamic urban growth, the respective administrations are faced with serious difficulties, since they are in charge of active development planning in terms of infrastructural progress such as the improvement of access to schools and hospitals, access as well as provision of public services like drinking water supply, sewage and waste disposal and planning and supervision of private construction activities.

Considerable difficulties are caused by spontaneous constructed and therefore unplanned and illegal private buildings. In some cities, this land of construction activity even leads to foundation of new urban wards beyond the existing administrative boundaries, causing profound changes in the land use patterns. Such highly dynamic urban growth makes urgent town planning inevitable. Unfortunately, master plans for town planning layout plan or simple street maps hardly exist. In Nigeria, accurate data on urban population is not available, since the latest and –politically influenced (Frickle and Malchau, 1994) - population figures are based on 1991 census, the regional results of which were published in the year 1998. The existing maps and aerial photographs were mostly produced in the 1960s and 70s and are thus time inadequate. Nigeria being the most populous nation in Africa therefore requires an accurate assessment and / or monitoring of the rate of growth of her urban cities. The development of Administrative maps as well as mapping/ monitoring of urban growth of urban cities in Nigeria therefore become imperative (Oluborode et al, 2004). Remote sensing technique with the use of satellite data has proved to be one of the fastest means for the development of Administrative maps and monitoring of the growth of urban cities. The use of satellite systems therefore will provide another means of information gathering that will assist in the planning of our cities, which will invariably guide our policy / decision makers in the formulation of policies that will result in the provision of infrastructures for the populace thereby improving the quality of living (Oluborode, et al, 2004).

The aim of this paper therefore is to examine the extent and nature of urban growth in Akure with the view of assessing its implications and possible urban management strategies preferred. The objectives are to;

1. Examine the rate of landuse changes in the study area, using remote sensing
2. Investigate the spatial attributes which enhance landuse change;
3. Assess the socio-economic implications of the landuse change in Akure
4. Produce multi-temporal thematic images and maps displaying the changes

2 The study area

The study can be achieved in any area using the approach, but for specifics, the present study focused on a fast growing administrative city in Nigeria, Akure. Previous study by Akinbode et al (2012) has shown that the level of urban heat island in Akure compares well with those of well older cities (Ibadan and Benin), and it is a representative of more than 10 other administrative State capitals that were created in Nigeria in 1976. Akure is situated on $7^0$15'N, 5^0 15'E and roughly lies on 370m above sea level. It is situated in the humid tropical region of Nigeria (see figures 1a, 1b and 1c). Its population has increase from 71,006 people in 1963 to 340,021 in 2006 (NPC, 2006), and has been estimated to increase annually by more than 5%. The increase in annual growth of the population has been tied to the administrative role of the town and its long standing role as a centre of economic activities attracting a large spectrum of immigrants into it.

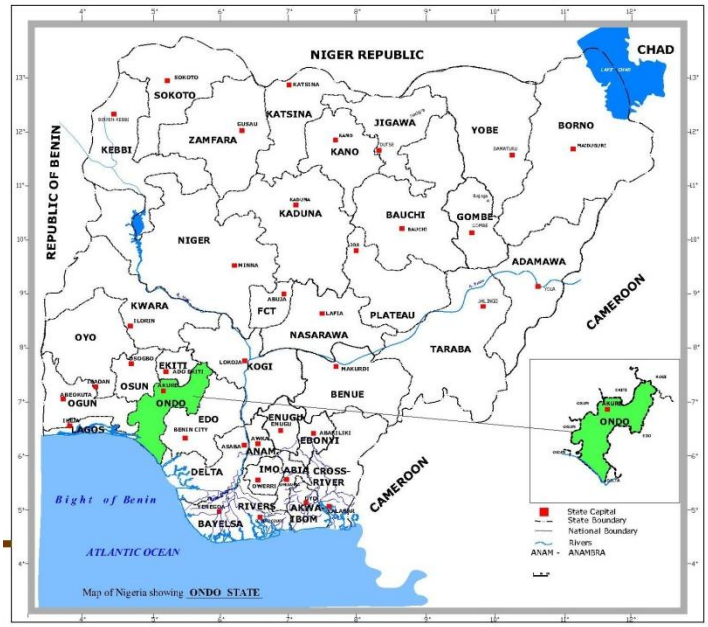

Figure 1a: Map of Nigeria Showing Ondo State

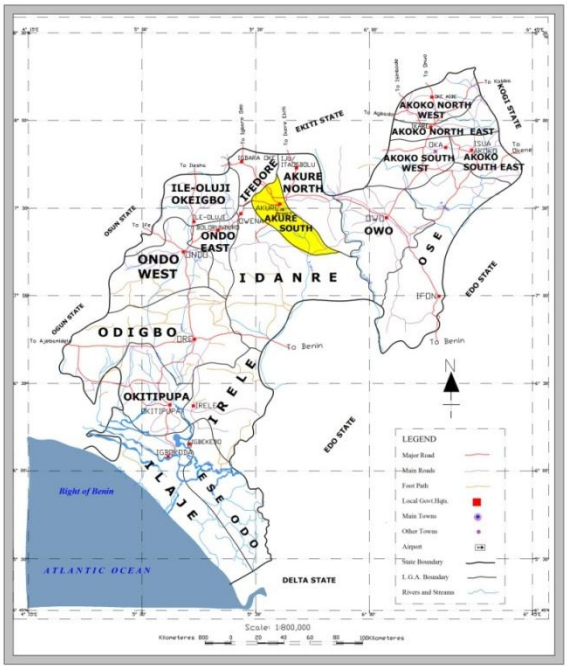

Figure 1b: OndoState showing the study area

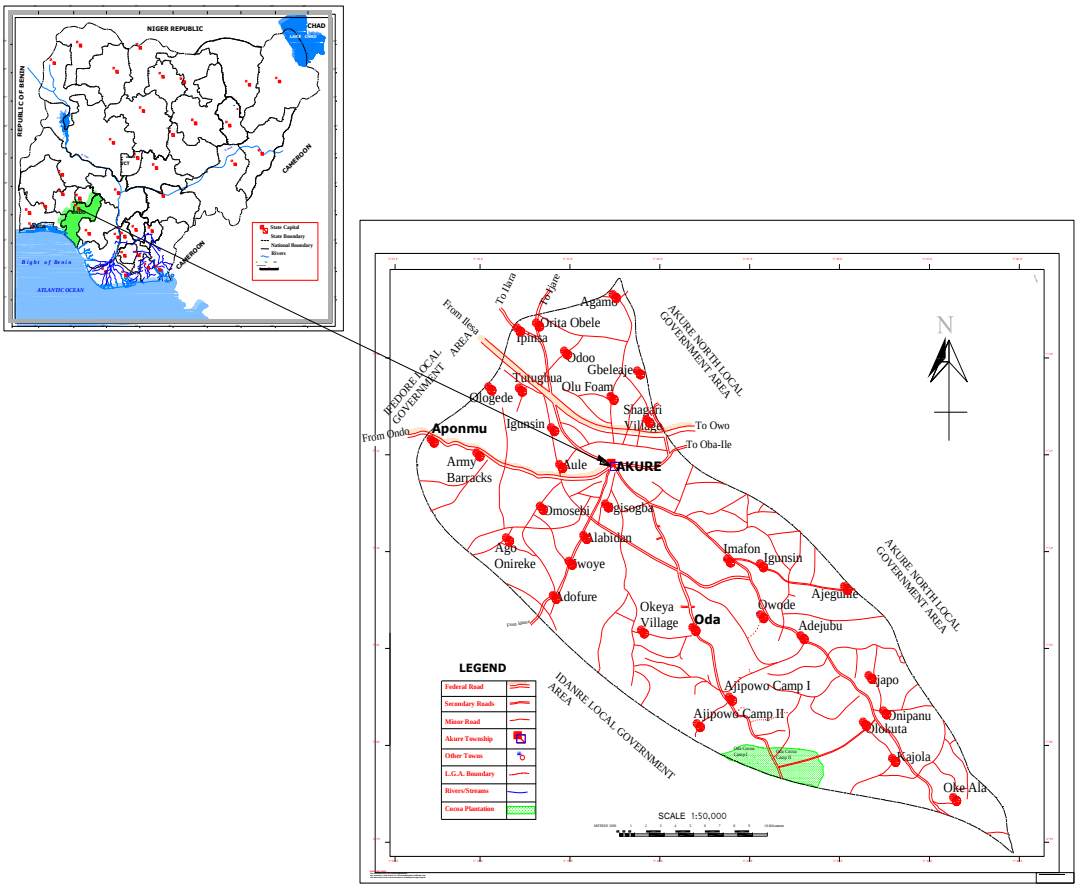

Figure 1c: Map Showing the Location of the Study Area in Nigeria

3. Data acquisition and Preparation

Data for landuse change of the city were obtained from three remotely sensed data and a topographical map of 1965 covering the study area were used to monitor the urban growth for the periods. Thematic Mapper (TM) was used for 1986 while Enhanced Thematic Mapper (EMT^{+}) images were acquired for 2002 and 2009. The images were geometrically corrected and ground control points obtained through intensive ground surveys permitted the co-registration of all images to a Universal Transverse Mercator (UTM). A supervised classification was performed on false colour composite (Bands 2, 3 and 4) into the following classes: Built –up, bare rock, bare land, dense forest, gallery forest, light forest, forest reserve and water body.

The questionnaire method was used to generate attribute data to further enhance our information on the study area. Using cluster sampling technique, Akure was sub-divided into 20 residential neighborhoods namely Ilesha Road/Alaba Layout Residential Area, Okuta-Elerinla Residential Area, Akure High School/Kajola Residential Area, Ijapo Residential Area, Alagbaka Residential Area, Ala River Residential Area, Federal Housing Estate (Shagari Village) Residential Area, Oba-ile Residential Area, Fanibi Layout/Lafe Residential Area, Oke-igan/Eruoba Residential Area, Isinkan/Ondo Road Residential Area, Oshinle Residential Area, Ijoka/Sijuwade Residential Area, Araromi/Isolo Residential Area, Oke-jebu Residential Area, Idi-agba Ijanikan Residential Area, Erekesan/Erekefa Residential Area, Ijomu Ilisa Residential Area (Okoko, 2002). For the purpose of this study, four residential districts were selected, these include: Erekesan / Erekefa, Isinkan/Ondo, Ijoka/Sijuwade and Federal Housing Shagari

village. Stratified and systematic random sampling techniques were used for this study. Stratified sampling techniques were used to separate the population of the study area into groups, while systematic random samplings were used to select buildings from each district. Four hundred and twenty questionnaires were administered in all out of which 301 were retrieved in analyzable form giving a response rate of 71.7%. By this rate of response, the exercise is considered successful. Two reasons could be given for the apparently high level of success. One, the authors opted for the research schedule version of questionnaire instrument. This version enabled the authors to mandate the field assistants to carry out in-situ interpretation of questions from the English language-the language of research –to Yoruba which is the local dialect, so as to enable respondents to answer the questions as well as retrieve immediately treated questionnaires.

The instrument is about the most-effective to collect data from preponderantly semi-illiterate audience to which the research is addressed. Figure 2 and table 1 show the sampled residential areas and the residential districts and the number of questionnaires administered per district respectively.

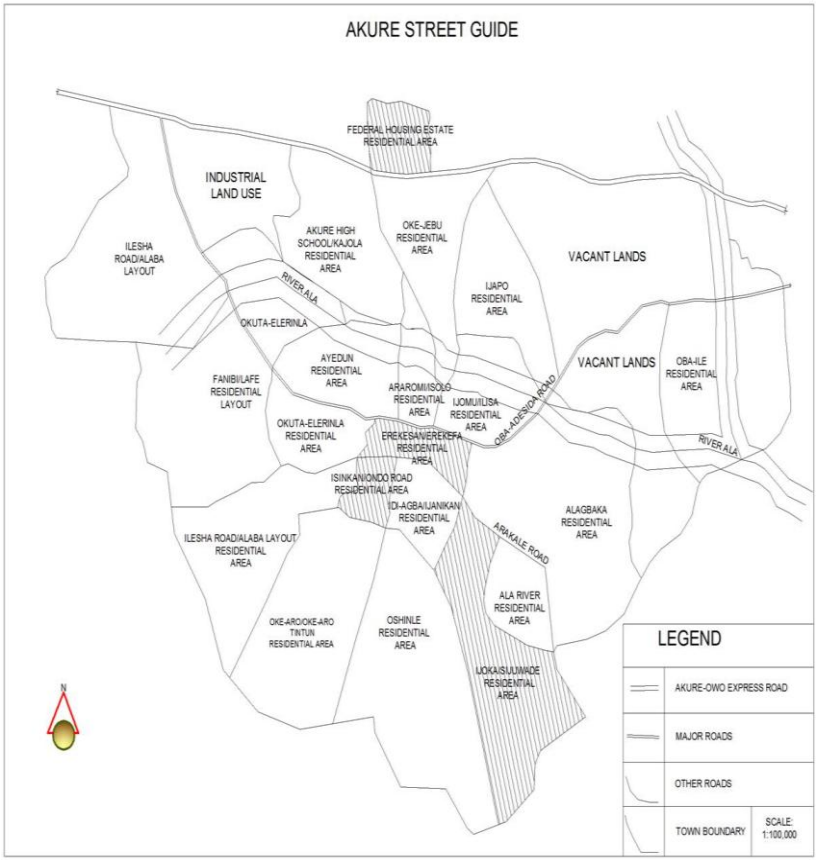

Figure 2: Map showing the sampled residential areas of Akure
Source: Adapted from Okoko (2002) with modification

Table 1: Questionnaire administrations

S/N	Residential District	Sampled Streets	Total no of Buildings	Questionnaire Administered	Questionnaire Retrieved	Percentage of Questionnaire Retrieved
1	Erekesan /Erekefa	Odo-koyi and Car	291	200	145	72.5
2	Isikan/Ondo Road	Ajebamidele and Gbogi	104	80	52	65.0
3	Ijoka/Sijuwade	Cannaland and Sunday	167	100	83	83.0
4	Federal Housing Shagari Village	Presidential Avenue and Quaterguard	42	40	21	52.5
5	**Total**		**604**	**420**	**301**	**71.5**

The data collected using this medium was processed using Statistical Package for Social Scientists (SPSS) Software. Results obtained were presented in the form of charts, tables and graphs among others.

The areas covered by the questionnaire include: demography, socio-economic, building condition, geographical characteristics of the study area; the existing condition of buildings, building types, year the buildings were erected, occupational status, location of farms, road accessibility educational use amongst others. The demographic and socio-economic questions specifically focused on the age, marital status, religion, educational income, employment of respondents and occupational status. All these questions were carefully analysed and considered in addition to spatial information from GIS analysis to arrive at our conclusions.

4 Results and discussion

The expansion of the city as shown by the GIS outputs and the results of questionnaires administered are discussed below.

4.1 Landuse Landcover distribution of Akure in 1965

The Landuse Landcover distribution map and table of 1965 are shown in figure 3 and table 2.In 1965, the dense forest has the highest with an area of 166307.79m^2 (96.23%), followed by rock out-crop with an area of 3953.66m^2 (2.29%). The built-up area and forest reserved have 1344.94m^2 (0.78%) and 1189m^2 (0.69%) respectively while bareland has the lowest with an area of 27.0m^2 (0.002%).

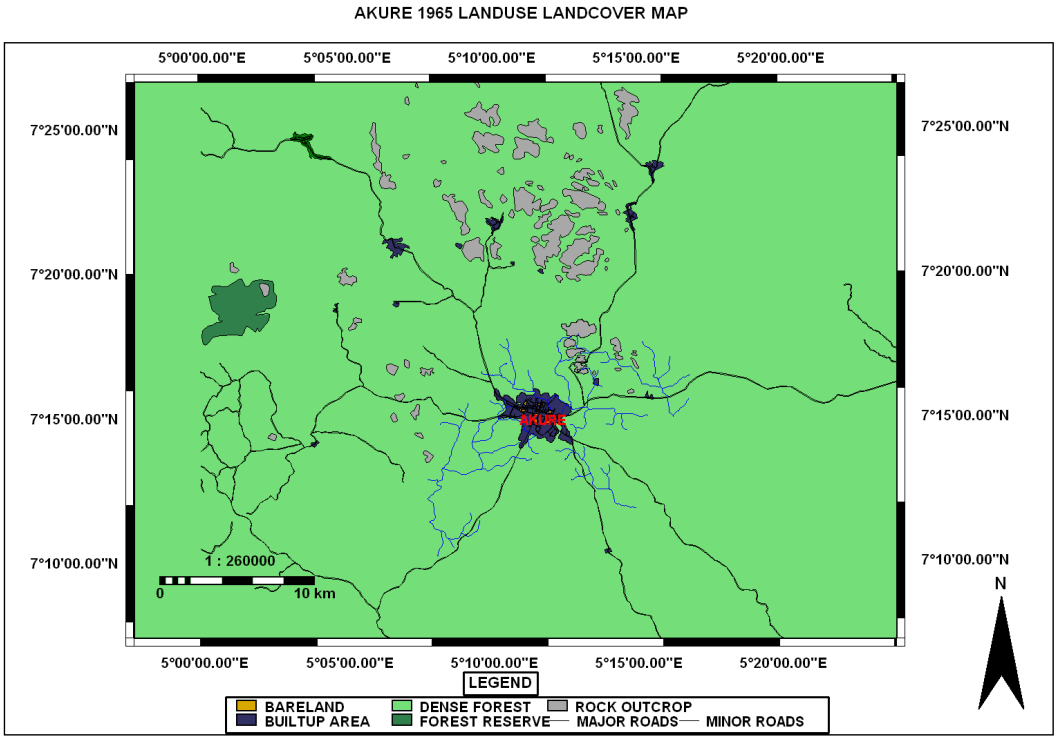

Figure 3: Land use/ Landcover Map of 1965 for Akure

Land Use class	Percentage	Area (m^2)
Built-up Area	0.78	1344.94
Rock outcrop	2.29	3953.66
Bareland	0.02	27.0
Dense forest	96.23	166307.79
Forest reserve	0.69	1189.29
Total	**100.00**	**172822.66**

Table 2: Landuse Landcover distribution of Akure in 1965

It should be noted that the most part of the area has been generalized as dense forest based on the fact that Akure has not started developing into a big city and the proportion of built-up area is small. Therefore, there is apparently less exploitation of the natural resources and most of the vegetation remains rain forest. In addition, the rock extracted from the 1965 topographic map cannot categorically be classified as bare rock because some are expectedly covered by vegetation.

4.2 Landuse/Landcover distribution of Akure in 1986

Figure 4 and table 3 shows the result of the image classification of 1986 LandSat TM image of Akure. There is a significant increase in the size of the built-up area from 1344.94m^2 in 1965 to 2797.20m^2 in 1986. The built-up area is still surrounded by the bare land which is exposed land under cultivation. Table 3 presents the Land Use Land Cover distribution of Akure in 1986

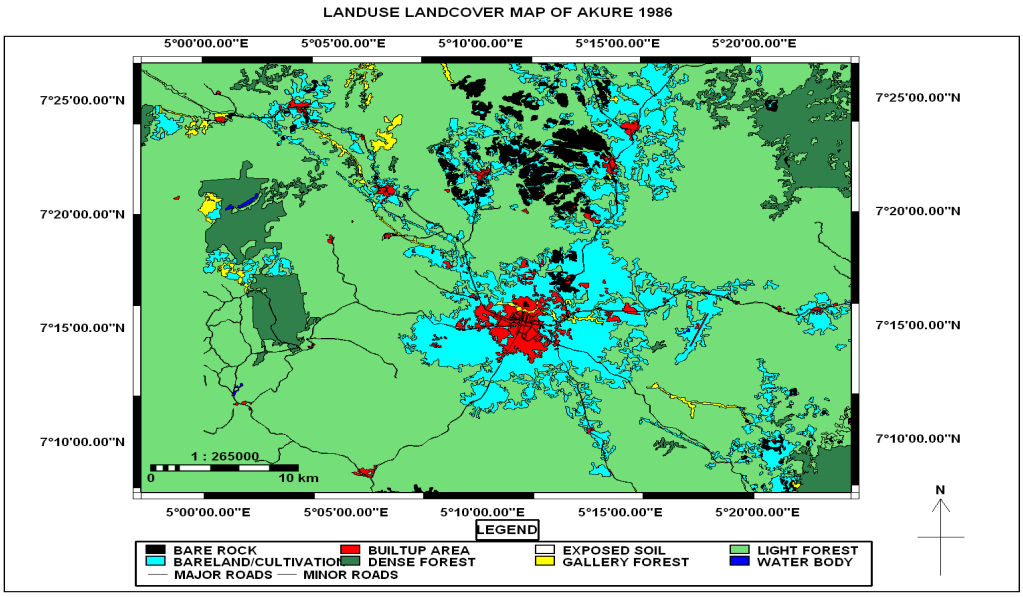

FIGURE 4: LANDUSE/ LANDCOVER MAP OF AKURE IN 1986

Table 3: Landuse Landcover distribution of Akure in 1986

Land Use class	Percentage of total	Area (ha)
Built-up Area	1.62	2797.20
Bare rock	2.64	4568.19
Bareland	13.53	23397.79
Dense forest	7.43	12850.17
Gallery forest	0.87	1502.11
Light forest	73.87	127737.37
Water body	0.05	80.61
Total	**100**	**172933.43**

4.3 Landuse/ Landcover distribution of Akure in 2002

Figure 5 and table 4 shows the landuse landcover map of the study area in 2002. It could be observed that the settlements which are referred to as built-up are still surrounded by the bare land or cultivation while the rocks remain in their original location. The dense forest is no longer concentrated as it were in 1986 while built-up areas are expanding in size.

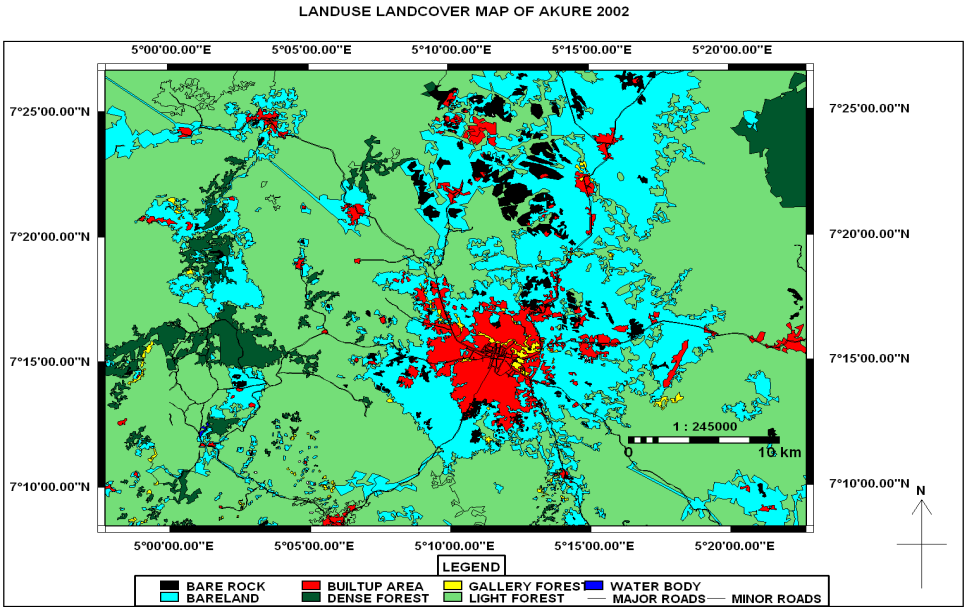

Figure 5: Landuse/ Landcover Map of Akure in 2002

Table 4: Land use Land cover distribution of Akure in 2002

Land Use class	Percentage of total	Area (ha)
Builtup Area	4.08	7,058.58
Bare rock	2.33	4,029.47
Bareland	23.36	40,396.22
Dense forest	5.77	9,977.33
Gallery forest	0.45	783.99
Light forest	63.96	110,592.73
Water body	0.05	80.03
Total	**100**	**172918.35**

Source: Classified satellite image of the study area for 2002

4.5 Landuse/ Landcover Distribution In 2009

It can be seen from the 2009 land use map that those areas that were bare land/cultivation in the 2002 land use map are now occupied with buildings in the 2009 land use map. It was also noticed that areas that were formerly light forest became grassland and dense forest has changed to light forest due to encroachment effects of development activities. There is restriction of growth of development towards the southwest of the area as a result of bare rock existing around the area while development could be seen growing along transportation route in the northern and eastern parts of the study area.

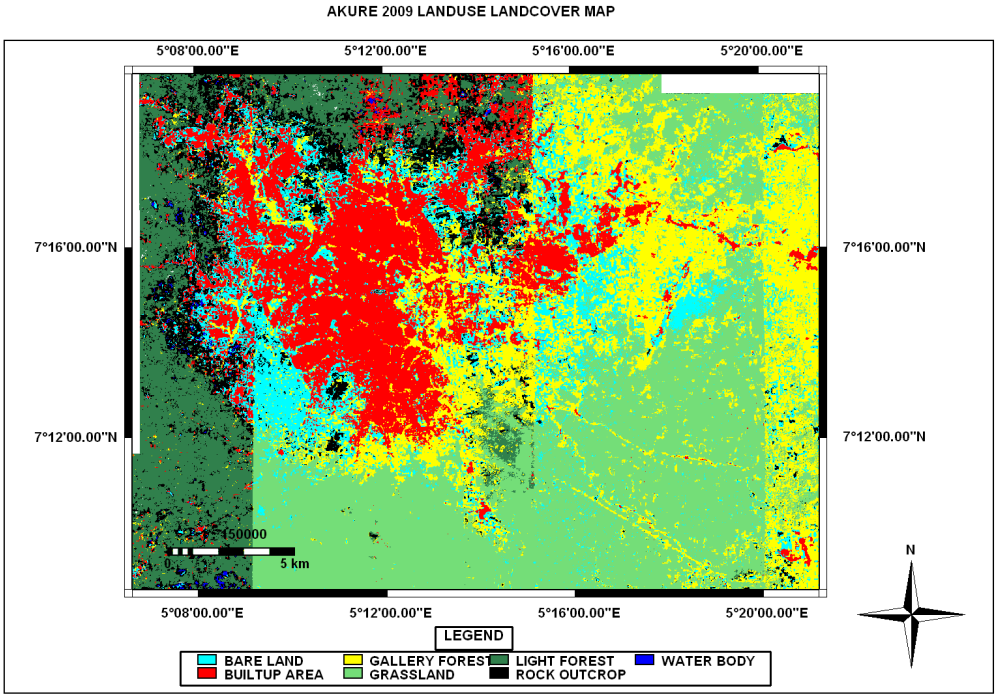

Figure 6: Landuse/ Landcover distribution in Akure in 2009

Table 5: Land use/ Land cover distribution of Akure in 2009

Land Use class	Percentage of total	Area (ha)
Built-up Area	16.63	8839.09
Bare rock	7.42	3,846.92
Bareland	13.08	6953.56
Grassland	29.25	15545.43
Gallery forest	20.92	11119.07
Light forest	12.70	6753.15
Water body	0.18	96.80
Total	**100**	**53154.02**

4.6 Overlay Maps (Landcover changes) of Akure in 1965, 1986 and 2002

Figure 7 shows the image map overlay of Akure in 1965, 1986 and 2002. Tables 6 and 7 show the rate of Landuse change of Akure between 1986 -2002 and 2002-2009 respectively.

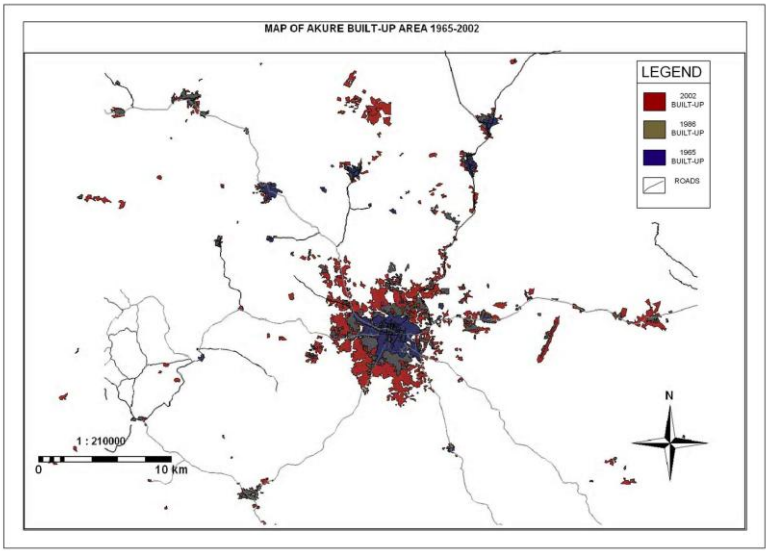

Figure 7: Image Map Overlay showing Urban Growth of Akure in 1965, 1986 and 2002

Table 6: Rate of Land Use Change Of Akure Between 1986 And 2002

Land use class	Percentages according to year		% change	Areal change (ha)	Rate of change	
	1986	2002			Percent per year	Area per year (ha)
Built-up	1.62	4.08	+2.46	+4,261.38	0.15	266.34
Bare rock	2.64	2.33	-0.31	-538.72	0.02	33.67
Bare land	13.53	23.36	+9.84	+16,998.43	1.46	1062.40
Dense forest	7.43	5.77	-1.66	-2,872.84	0.10	179.55
Gallery forest	0.87	0.45	-0.42	-718.12	0.03	44.88
Light forest	73.87	63.96	-9.89	-17,144.64	0.62	1071.54
Water body	0.05	0.05	0.00	-0.58	0.00	0.036

Table 7: Land-Use Changes In Akure Between 2002 And 2009 (Area In Ha)

Land use class	2002	2009	Areal change
Built-up	7,058.58	8,839.09	+1,780.5
Bare rock	4,029.47	3,846.92	-182.5
Bare land	40,396.22	6,953.56	-33,442.7
Dense forest	9,977.33	-	-9,977.3
Gallery forest	783.99	11,119.07	+10,335.1
Light forest	110,592.73	6,753.15	-103,839.6
Water body	80.03	96.80	+16.77
Grassland	-	15,545.43	+15,545.43
Total	**172918.35**	**53,154.02**	

The overlaid built-up map shows that Akure is growing radialy and along the transportation route. Nevertheless, it points out some major land use conflicts in the utilization of available land resources. For example, most arable land in 2002 land use map have been

taken over for residential development by 2009 thereby depriving urban dwellers spaces for urban agricultural development. This phenomenon could greatly affect the well-being of the people as a healthy living is a potential tool for a rapid economic development

4.7 Comparison of the Generated Classified Images

A supervised classification was performed on these false colour composite (band 4,3 and 2) into the following landuse/classes; Built- up area, Bare rock, Bareland, Grass land, Gallery forest Light forest and Water body. The classification results of figure 3, 4, 5 and 6 however show remarkable differences as evidenced on tables 2, 3, 4 and 5. On comparing the figures 4, 5, and 6 and also table 3, 4 and 5 it was observed that the built-up area covered 2797.20 Area (ha) (1.62%) in 1986, 7,058.58 Area (ha) (4.08%) in 2002 and increased to 8839.09 Area (ha) (16.63%) in 2009. Furthermore, high forest decreased gradually from 127737.37 Area (ha) (73.87%) in 1986 to 110,592.73 Area (ha) (63.96%) in 1986 and further decreased drastically in 2009 to 6,753.15 Area (ha) (12.70%) in 2009. The bareland on the other hand due to massive cultivation of land and population increase had also increased from 23397.79 Area (ha) (13.53%) in1986 to 40,396.22 Area (ha) (23.36%) in 2002 and later decreased to 6953.56 Area (13.08%) in 2009. Also Bare rock due to encroachment and quarrying activities had decreased from 4,568.19 Area(ha) (2.64%) in 1986 to 4,029.49 (ha) (2.33%) in 2002 and further decreased to 3,846.92 (7.42%) in 2009. Table 7 was used to show the landcover change based on the landuse classifications. It was observed that the built-up expanded from 7,058.585 Area (ha) to 8,839.08 Area (ha). Also in table 6 the built-up area changed at the rate of 4,261.38 Area (ha) (2.46%) per year during the period (1986-2002)

4.8 Planning Implications of Urban Growth in Akure

Akure is growing along the transportation routes. From figure 7, Akure-Owo express way, Akure-Ijare road, Akure-Ado road to the east, north-west and north-east of the map respectively all witnessed physical developments. This implied that the development of transportation infrastructure as a factor of growth in the study area will further facilitate the growth of the area. This will also increase economic activities in the study area. On the other hand, the concentration of residential developments along these roads has led to the increase in traffic volume experienced on the roads. This has implication on the efficiency of workers and waste valuable working time (Atonade, 2011).

The areas around built-up experienced continuous growth while the bare land/cultivation declined greatly from 2002 and 2009 highlighting the loss of suitable land for growing crops to residential developments. The natural vegetation has been destroyed to give way to the expanding residential and commercial houses in the areas. This has negative effect on food supply and leads to decrease in the share of the population engaging in urban agriculture thereby compounding the problem of unemployment in the study area. Thus, less than 15% of the population engages in farming while research data also showed that none of the existing farms are within the Akure neighborhoods. This implied that urban expansion contribute to the problem of insufficiency of land for farming in the study area with the resultant hike in prices of food items.

The indiscriminate logging of trees in the light forest area of Akure also brings about loss in soil quality and degradation which are the factors of low agricultural productivity. As the top layer of soil are removed and exposed to heat and weather conditions through deforestation, the soil loses its fertility gradually and becomes unproductive.

The settlements that have experienced this growth in the urban fringe have generally suffered the lack of urban services and lack access roads. The expansion have completely

overwhelmed the area and urban infrastructures have not kept pace with the expansion leading to lack of vital services as water supply, drainage, roads among others. Where they are available, they are over-utilized. This is attributed to rapid population increase of the study area.

Higher traffic volume along the roads as well as loss of green areas contributes to higher level of air and noise pollution as well as the rise in temperatures of Akure. These could have costly implications on the economy of the area.

The expansion of Akure has most likely increased the cost of more accessible lands near the city centre. This led to high cost of house rent in the study area as confirmed by the field survey which indicated that about 80 percent of the tenant agrees that urbanization has been the cause of increase in rent paid especially in the centre. Thus, low income earners are forced to live on less expensive land at the farthest distances to work which are found in the centre. This has implications for the affordability of transport for the low income earners with meager options for mobility in Akure.

The extensive deforestation that occurred in the study area is associated with the shortage of tree crops of economic value such as cocoa, kolanut, oil palm among others. This is as a result of the forest land and plantations being cleared to give way for the developmental activities of man. In addition, forests constitute resources and sources of revenue to government thereby contributing to the economy of an area. The removal of forest, therefore, means economic loss to Akure.

The variables that are responsible for rapid expansion of the city include: Building types, year the buildings were erected, occupational status, location of farms, road accessibility, educational use, amongst others (see table 8-12).

Table 8 shows that 41% of building types in the study area are storey buildings, the planning implication of this is that since Akure became the State Capital in 1976, there has been wide spread of buildings at periphery due to urban growth and civilization.

Figure 8: Building Types

Building types	Frequency	%
Face-to-face	45	15.0
Flat/flatlets	83	27.6
Duplex	28	9.3
Storey buildings	128	42.4
Others	17	5.7
Total	**301**	**100**

Table 9 shows that between 1976 and 1986, there was 18.6% increase in building construction that is rising from 20.2% to 21.3% in 1998 -2008 and 2009 upwards respectively when the building construction was almost stable. It is believe that this is as a result of increase in the cost of building materials and construction services.

Table 9: Year the Buildings Were Erected

Land Use class	Frequency	%
Before 1965	21	7.0
1965-1975	40	13.3
1976-1986	56	18.6
1987-1997	59	19.6
1998-2008	61	20.2
2009 till date	64	21.3
Total	**301**	**100**

Table 10 shows the location of farms in the study area. It was discovered that existing farms are either within the compound of buildings or at the outskirt far away from Akure township where sufficient land are available. The research data indicate that there were no neighborhood farms where food crops can be cheaply grown as it were in the past. This shows high rate of urbanization in the study area.

Table 10: Location of Farm

Location of farm	Frequency	%
Within compound	18	6.0
Within neighborhood	-	-
Outskirt Akure	256	85.0
None of the above	27	9.0
Total	**301**	**100**

Table 11 shows that 66.1% the area is highly accessible. The major problem of the area is there is lack of drainage facilities. As a result of this problem, when rain falls, the runoffs are scattered over every open and available space leading to flooding of streets and buildings. In addition, facilities are damaged and buildings are destroyed.

Table 11: Road Accessibility in the Study Area

Road accessibility	Frequency	%
Highly accessible	54	18.0
Accessible	199	66.1
Fairly accessible	41	13.6
Not accessible	7	2.3
Total	**301**	**100**

From table 12, 32.9% are devoted to primary institutions, 41.2 for secondary institutions.Tertiary institutions are generally low with 25.9%.It must be stated that institutions were spatially distributed all over the area.Most of the higher institutions are found at the outskirts of the town because of their land cover area which demands for large or an extensive area thereby contributing to population growth.

Table 12: Educational Institution

Types of Institution	Frequency	%

Primary	99	32.9
Secondary	124	41.2
Tertiary	78	25.9
Total	**301**	**100**

6 Conclusion and recommendations

The study has highlighted the land cover changes and the dynamics of urban expansion of Akure as an administrative city using post-classification techniques of GIS approaches for combining satellite remote sensing data with demographic data. It has identified some of the issues that have contributed to urban expansion in the city. Akure as a capital state has been allowed to expand in haphazard form leading to social, economic and environmental degradation. From the GIS outputs, the following result could be deduced. The classification results combined with thematic maps, the landcover in the study area was found to have changed significantly. In particular, the built up areas have increased by 7494.15 Area (ha) over the period from 1965 to 2009, representing an increase in area coverage of over 500%. Loss of forest and the problem of Urban sprawl have accompanied the urban expansion. It is noted that building types, year the buildings were erected, occupational status, location of farms, road accessibility, and educational use amongst others were the important variables responsible for rapid expansion of the city. Spatial directions have been along the major roads particularly Northwest witnessed expansion in the 2002-2009 was followed Southwest during the same period. This study therefore advances some recommendations as a way of preventing haphazard expansion in the study area.

There is need to control urban spreading to agricultural land as this will have serous repercussion on food productions. Also various development and legislative measures should be adopted as to regulate growth and associated sprawl within the study area. (Oyinloye, 2010)

It is also recommended that shelter belt be introduced and created around the city boundary where trees are consciously planted and designated as green-belt to prevent further expansion in form of encroachment on adjoining zones thereby checking the spilling of residential development to the farm lands. This study has contributed to the understanding of spatial and temporal dynamics of urban growth of Akure city as a state capital and will assist the local and the state government to form a basis for batter planning and effective spatial organization of urban activities. It will equally assist the city planners and decision makers also to support sustainable urban development initiative (Oyinloye 2010)

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