Global Journal of Management and Business Research
Volume 12 Issue 23 Version 1.0 Year 2012
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Capacity Planning and Its Implications on the Infrastructural Development Needs of Some Selected Higher Institutions in the Eastern Senatorial District of Kogi State

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GJMBR Classification : *JEL Code : O18*

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Keywords : capacity planning, infrastructures, bucket theory, strategic, forecast, institutions.

I. Introduction

a) Background of the Study

Capacity refers to an upper limit or ceiling on the load that an operating unit can handle while capacity planning is a key strategic component in designing a system (Stevenson, 2009). It encompasses many basis decisions with long-term consequences for the organization.

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Forecasts are a basic input in the decision process of capacity planning because the provide information on future demand. Thus, the importance of forecasting to capacity planning cannot be overstated. The primary goal of capacity planning is to match supply to demand. Having a forecast of demand is essential for determining how much capacity will be needed to meet present and future demand. The goal of strategic capacity planning is to achieve a match between the long-term supply capabilities of the organization and the predicted level of long-term demand. Organizations become involved in capacity planning for various reasons. Among the chief reasons are changes in demand, changes in technology, changes in the environment and perceived threat or opportunities.

A gap between current and desired capacity will result in capacity that is out of balance. Overcapacity causes operating costs that are too high, while under capacity causes strained resources, possible loss of customers, conflicts among the various units in the organization, possess academic threats, lack of qualitative studying environment etc.

Capacity planning is one of the major problems confronting most Nigerian higher institutions today, particularly the government owned higher institutions. The capacity of most Nigerian higher institutions particularly in the area of basic infrastructures such as electricity, water supply, hostel accommodation etc are not properly planned for and as these institutions grow particularly in population (staff and students), problem of managing the demand occasioned by this explosion in population becomes a serious case thereby causing problems in the environment of studies.

Most of these institutions are faced with shortages of human resources needed and other basic infrastructures necessary to create a favorable studying environment. Kogi State University, Federal Polytechnic and college of education, Ankpa are some of the fastest growing state and federal institutions, which are particularly affected, in facing these basic infrastructural requirements needed for the necessary enabling environment of studies due to lack of adequate strategic capacity planning.

Forecasts are key inputs used to answer the questions of how much capacity is needed and when it is needed. This means that in deciding on the type of lecture hall to be constructed, the size of such hall need to be forecasted on the basis of increment of students population in the next 3-10 year period. (James, et al, 1990).

Related questions here according to James, et al, (1990) include:

- *How much will it cost, and what is the expected return?, in this case, the expected satisfaction from students and lecturers alike.*
- *What are the potential benefits and risks? These involve the degree of uncertainty related to forecasts of the amount of demand and the rate of change in demand, as well as costs, profits, and time to implement capacity changes.*
- *Are there sustainability issues that need to be addressed?*
- *Should capacity be changed all at once, or through several (or more) small change.*
- *How much capacity is needed to match demand, and when is it needed?*

Capacity planning decision involves both long-term and short-term considerations. Long-term considerations relate to overall level of capacity, such as facility size; short-term considerations relate to probable variations in capacity requirements created by such things as seasonal, random, and irregular fluctuations in demand (Dejonckheere, et al, 2003). Organizations like these higher institutions need both long-term and short-term capacity planning decisions so as to be able to meet up with both long-term and short-term considerations.

b) Statement of the Problem

Infrastructural development capacity planning is one of the major problems confronting most higher institutions in Nigeria particularly in Kogi State, in our contemporary time. Higher institutions are charged with accurately assessing infrastructures and human resources capacity planning for future needs. This capacity planning though common in most profit-oriented organizations, is missing or inept in most institutions in Nigeria particularly the government owned (state and federal) institutions. Research have shown that most of these higher institutions lack the ability to effectively plan for future capacity needs and as such, considerable shortages and stranded capacity exists in many of these higher institution, with fast capital spending resulting in shortages of resources or under utilized resources.

[In today's competitive economic environment, staff and students do not just prefer but demand their institutions to provide quality services in a timely fashion at competitive prices]. To satisfy this requirement, government and the management of these institutions need to plan for the necessary and sufficient capacity to meet both present and future decision in a balance manner. However, capacity planning is a very challenging task for many institutions due to uncertainty in terms of students intake and the number of staff making the infrastructural needs of most of these higher institution to be very difficult to accurately forecast. This uncertainty in decision among other factors (i.e. coupled with the fact that capacity planning challenging task) has resulted to shortages in the infrastructural requirement of these higher institutions. In view of the shortages of these infrastructure occasioned by the inability of the government and management of these institutions to effectively plan for the capacity requirements, the researcher looked at the negative consequences it is having on these institutions. To these end the following research question border the mind of the researcher:

i. Is the planning of capacity necessary to help predict the future infrastructural needs of the higher institutions in Kogi State?
ii. Does lack of proper capacity planning on the part of government and management of these institutions have any negative implications on the study environment?
iii. Does government have any role to play in the capacity planning of infrastructural needs of these higher institutions?

c) Objectives of the Study

In general, the objective of this study is to critically analyse the problem associated with the inability of government and management of these institutions in Kogi State to effectively plan for their capacity requirements and its consequences for the study environment.

Specifically the objectives of this study include the following:

i. To determine if capacity planning of infrastructural needs is necessary for these higher institutions in Kogi State.
ii. To determine if lack of proper capacity planning on the part of government and the management of these institutions have any negative implications on the studying environment.
iii. To determine if the government have any role to play in the effective planning of capacity requirements of these higher institutions in the state.

d) Statement of Hypotheses

H_0: Capacity planning is not necessary to predict the future infrastructural needs of the higher institutions in Kogi State.

H_1: Capacity planning is necessary to predict the future infrastructural needs of the higher institutions in Kogi State.

H_0: Lack of proper capacity planning by the government and the management of these institution do not have any negative implications on the environment of study.

H_1: Lack of proper capacity planning by the government and the management of these higher institutions have negative implications on the environment of study.

e) Significances of the Study

The findings of this research work will be of great importance to government, the management of these institutions, academicians and researchers. It will also be invaluable to businessmen and women, corporate bodies, marketers of all categories, retailers, wholesalers as well as policy makers in various ways in production, planning and forecasting, demand and supply planning forecasting, manpower planning and forecasting and so on.

First, it will create and increase awareness of the importance of capacity planning and it relationship with forecasting. The study will create awareness for service organizations, institutions of learning as well as manufacturing organizations that there are generally, four levels where capacity planning is required such as; in the area of high level business planning, management of the demand and the gross capacity to meet it, scheduling of individuals cells or process areas, and in the area of individual process management.

The outcomes of this study will spur the policy makers to formulate realistic capacity planning and implementation policies that are likely to enhance quality of services delivery among the higher institutions in Kogi State and the country at large. The knowledge of the link between capacity planning and demand and supply forecasting will enable the policy makers to plan formulate and executed policies that would enhance the services delivery and quality at education among the higher institution in Kogi State and the country at large.

f) Scope of the Study

The study focuses on some selected higher institutions in Kogi State Eastern Senatorial District. These institutions include; Kogi State University (K.S.U) Anyigba, Federal Polytechnic Idah (FPI) and College of Educations (COE) Ankpa. The respondents would include only the academic staff and all the regular fulltime students of the selected institutions, excluding visiting or part-time lecturers for the staff, and excluding post-graduate, spillover, and part-time students respectively for the students.

II. Literature Review and Theoretical Framework

a) Introduction

A conceptual framework focuses on the main dimensions to the studied, the factors or variables and the presumed relationship between them or in other words something that explains, either graphically or in narrative form, the main things to be studied. Sasser, et al (2004), stated that, by theoretical framework we refer to the conscious and deliberate decision that a researcher has made in terms of the theory or a combination of theories, which guide his research effort. From the foregoing therefore, the aim of this section would be in summary, to review the relevant major concept, and to also review in summary, the main theories that would be used in the research study.

Determinants of Effective Capacity

The main factors which determine an effective capacity according to Stevenson (2009) include the following:

Facilities : The design of facilities including size and provision for expansion is an important factor. Location factors, such as transportation costs, distance to lecture hall from the various hostels, energy sources, labour supply, as well as room for expansion, are important. Likewise, layout of the work area often determines how smoothly work can be performed, and environmental factors such as heating, lighting and ventilation also play a significant role in determining whether personnel can perform effectively or whether they must struggle to overcome poor design features.

Product and Service Factors : Product and service design can have a tremendous influence on capacity. generally speaking, the more uniform the output, the more opportunities there are for standardization of methods and materials, which leads to greater capacity. The particular mix of products or services rendered also must be considered since different items will have different rates of output.

Process Factors : The quantity capability of a process is an obvious determinant of capacity. A more subtle determinant is the influence of output quality. For instance, if quality of output does not meet standards, the rate of output will be slowed by the need for inspection and rework activities. Productivity also affects capacity. Process improvements that increase quality and productivity can result in increased capacity.

Human Factors : The tasks that make up a job, the variety of activities involved, and the training, skill, and experience required to perform a job all have an impact on the potential and actual output. In addition, employee motivation has a very basic relationship to capacity, as do absenteeism and labour turnover.

Policy Factors : Management policy can affect capacity by allowing or not allowing capacity options such as overtime or second or third shifts.

Operational Factors : Scheduling problems may occur when an organization has differences in equipment capabilities among alternative pieces of equipment or differences in job requirements. Inventory stocking decisions, late deliveries, purchasing requirements, acceptability of purchased materials and parts, and quality inspection, and control procedures also can have an impact on effective capacity.

b) Need for Capacity Planning

For a number of reasons capacity decisions are among the most fundamental of all the design decisions that managers must takes (Stevenson 2009). In fact, capacity planning decisions can be critical for an institution:

1. Capacity decisions have a real impact on the ability of organization to meet future demands for either products of services; capacity essentially limits the rate of output possible. Having capacity to satisfy demand can often allow a company to take advantage of tremendous benefits.
2. Capacity decisions affect operating costs. Ideally, capacity and demand requirements will be matched, which will tend to minimized operating costs. In practice, this is not always achieved because actual demand either differs from expected demand or tends to very. In such cases, a decision might be made to attempt to balance the costs of over- and- under capacity.
3. Capacity is usually a major determinant of initial cost. Typically, the greater the capacity of a productive unit, the greater its cost. This does not necessarily imply a one-for-one relationship; larger units tend to cost proportionately less than smaller units.
4. Capacity decisions often involve long-term commitment of resources and the fact that, once they are implemented, those decisions may be difficult or impossible to modify without incurring major costs.
5. Capacity affects the ease of management; having appropriate capacity makes management easier than when capacity is mismatched.
6. Capacity decisions can affect competitiveness. If a firm has excess capacity, or can quickly add capacity, that fact may serves as a barrier to entry by other firms. Then too, capacity can affect delivery speed, when can be a competitive advantage.
7. Because capacity decisions often involve substantial financial and other resources, it is necessary to plan for them far in advance. For instance, it may take years for a new lecture hall or a new power generating plant to be constructed and become operational. However, this increases the risk that the designated amount of capacity will not match actual demand when the capacity becomes available.
8. External factors:- product standards, especially minimum quality and performance standards, can restrict managements options for increasing and using capacity. Thus, pollution standards on products and equipment after reduce effective capacity, as does paperwork required by government regulatory agencies by engaging employees in nonproductive activities.

c) Capacity Planning Steps

Below according to Imaga (2003) in Stevenson (2002) are the steps in the capacity planning process:

- Estimate future capacity requirements
- Evaluate existing capacity and facilities and identify gaps
- Identify alternatives for meeting requirements
- Conduct financial analysis of each alternative
- Assess key qualitative issues for each alternative
- Select the alternative to pursue that which will be best in the long term
- Implement the selected alternative in the long team
- Monitor results

d) Forecasting Capacity Planning Requirements

The decision involved in capacity planning is of both long-term and short term considerations. Long-term considerations relate to overall capacity level, like the size of capacity; while short-term considerations relate to probable various in capacity requirements created by such things as seasonal, random, and irregular fluctuations in demand (Stevenson 2009).

Long-term capacity needs require forecasting demand over a time horizon and then converting those forecasts into capacity requirements (Adam et al, 1978). Some basic demand patterns that might be identified by a forecast are: power usage, education welfare and social security checks classroom utilization, students accommodation, staff accommodation, officer accommodation, sports and recreation, etc. In addition to basic patterns there are more complex patterns, like a combination of cycles and trends. When trends are identified, the fundamental issues are; how long the trend might persist, as it is only few things that last forever, and the slope of the trend (Imaga, 2003). If cycles are identified, interest focuses on; the approximate length of the cycle and the amplitude of the cycles (Stevenson, 2009).

Short-term capacity needs are less concerned with cycles or trends than with seasonal variations and other variations from average. These deviations are particularly important because they can place a severe strain on a system's ability to satisfy demand at some times and yet result in idle capacity at other times.

e) Capacity Planning Problems

Some of the capacity planning problems facing many organizations include:

1. Demand volatility presents problems for capacity planners
2. Inability to make effective demand forecast. Capacity planning decisions involve both long-term and short-term considerations. The long-term considerations which relate to the overall level of capacity such as facility size pose much more problem if an effective demand forecasting tool is be employed.
3. Inadequate capacity planning can also be a major limiting determinant of effective capacity.
4. Inadequate finance by the concerned authority (ie government)

f) Some Challenge for Planning Service Capacity

Three very important factors in planning service capacity according to Stevenson (2009) are:

The Need to be near Customers

Convenience for customers is often an important aspect of service. Hostel rooms for instance must be where customers want to stay:

The Inability to Store Service:

Capacity must be matched with the timing of demand. Unlike goods, services cannot be produced in one period and stored for use in a later period. Thus, an unsold seat on an airplane, train, or bus cannot be stored for use on a later trip. Similarly, inventories of goods allow customers to immediately satisfy wants, whereas a customers who wants an service may have to wait. This can result in a variety of negatives for an organization that provides the service. Thus, speed of delivery, or customer waiting time, becomes a major concern in service planning capacity.

The Degree of Volatility of Demand:

Demand volatility presents problems for capacity planners. Demand volatility tends to be higher for services than for goods, not only in timing demand, but also in the amount of time required to service individual customers.

g) Capacity-Planning Techniques

There are four procedures for capacity planning; capacity planning using overall factors (CPOF), capacity bills, resource profiles, and capacity requirements planning (CRP). The first three are rough-cut approaches (involving analysis to identify potential bottlenecks) that can be used with or without manufacturing resource planning (MRP) systems. CRP is used in conjunction with MRP systems. (Jonsson, 2002)

Capacity using overall factors is a simple, manual approach to capacity planning that is based on the master production schedule and production standards that convert required units of finished goods into historical loads on each work center. Bills of capacity are a procedure based on the MPS. Instead of using historical ratios, however, it utilizes the bills of material and routing sheet (which shows the sequence or work centers required to manufacture the part, as well as the setup and run time). Capacity requirements can then be determined by multiplying the number of units required by the MI'S by the time needed to produce each. Resource profiles are the same as bills of capacity, except lead times are included so that workloads fall into the correct periods.

Capacity requirements planning (CRP) is only applicable in firms using MRP or MRP II. CRP uses the information from one of the previous rough-cut methods, plus MRP outputs on existing inventories and lot sizing. The result is a tabular load report for each work center or a graphical load profile for helping plan-production requirements. This will indicate where capacity is inadequate or idle, allowing for imbalances to be corrected by shifts in personnel or equipment or the use of overtime or a demanded shifts. Finite capacity scheduling is an extension of CRP that simulates job order stopping and starting to produce a detailed schedule that provides a set of start and finish dates for each operation at each work center.

A failure to understand the critical nature of managing capacity can lead to chaos and serious customer service problems (Meredith, et al, 2002). If there is a mismatch between available and required capacity, adjustments should be made. However, it should be noted that firms cannot have perfectly-balanced material and capacity plans that easily accommodate emergency orders. If flexibility is the firm's competitive priority, excess capacity would be appropriate.

III. Research Methodology

a) Introduction

This section deals exclusively with the methods, procedures, and the system adopted by the researcher, in the collection of the necessary data and information for the research work.

Every stage of the research process forces some kind of sampling. This is so, because it becomes apparently impossible to include all the variables which might be relevant, to administer questionnaire and interview every one who might provide useful information or to use all the data collected in the final report.

b) Research Design

This is the process of structuring investigation aimed at identifying variables and their relationships to one another (Ihemeja, 2006). Survey research was used in this research as the researcher majorly used first

hand information and data from primary sources (i.e. Through the use of questionnaires and interviews).

c) Population of the Study

The researcher used two research population in this study. The first population comprises of all the academic staff of the three institutions under investigation (ie. KSU, Anyigba, FPI Idah and COE Ankpa). These staff population includes KSU Anyigba (365) staff (2011/2012); FPI, Idah (285) staff (2011/2012) and KSCOE, Ankpa (237) staff (2011/2012). The summary of these gives a total of 887 academic staff. While the students population comprises of all the 100 to 5000 level students of the six (6) faculties in KSU Anyigba, all the ND I and ND II and HND I and HND II students of the seven (7) schools in FPI Idah and all the NCE I, NCE II and NCE III students of the three faculties in KSCOE, Ankpa. The breakdown is given as; KSU, Anyigba 11,338 students for (2011/2012); FPI, Idah 5,877 students (2011/2012); and KSCOE, Ankpa 5,539 students (2011/2012). The summation of these three gave a population of about 22,764 students. Note that in the above analysis the following categories of staff and students were not included in the population of either the staff nor the students because they may not be able to provided accurate or correct answers to this question raised in the questionnaire. These categories of staff include; part-time lecturers and non-academic staff of the various selected institutions and for the students we have; all the diploma, pre-degree and PG students respectively of KSU Anyigba, all the pre-ND and part-time students of FPI, Idah respectively and all the pre-NCE and part-time all the pre-NCE and part-time students of KSCOE, Ankpa respectively. Moreso, only the academic staff who are either tenure or contact staff and regular and full-time students of these institutions where used as students population because of their close relationship and regular contact, thus making possible for these categories of respondents to provides accurate answers to the questions raised in the questionnaire.

d) Sample Size of the Study

Since it would neither be possible nor practicable to study all the students and staff of these randomly selected higher institutions we used the yaro yamenu formula to arrive at the sample size for both the staff and the students of the institutions in question. The formula according to (Ezirim, 2004:114) in Ogbadu (2011) is stated as:

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size to be determined
N = population of the study
e = margin of error

a. For the staff sample size where N = 887 and e = 0.033

$$n = \frac{887}{1 + 887(0.033)^2} = 450 \text{ staff}$$

b. for the students sample size where N = 22,764 and e = 0.0388

$$n = \frac{22,764}{1 + 22,764(0.0388)^2} = 650 \text{ students}$$

e) Sampling Techniques

The researcher used stratified sampling techniques and then applied a random selection techniques on each stratum. To this end, three (3) higher institutions in kogi eastern sensational district were randomly selected using judgmental approach.

Sources of Data Collection

The researchers used both primary and secondary data for research study. Primary data sources include the use of questionnaire and interview, while secondary data were obtained from text books, journals and internet.

Method of Data Analysis

The researcher used descriptive statistics such as frequency, mean, and simple percentages to analyse the responses from the administered questionnaire; while simple regression analysis, F-test, correlation coefficient, coefficient of determination, T-test, and ANOVA respectively were used, to test the research hypotheses.

IV. Data Interpretation Analysis and Interpretation

a) Introduction

This section deals with the presentation, analysis and interpretation of the various data collected. In this chapter therefore, the researcher attempted to analyse the responses from the questionnaire and interview questions. Also discussed in the chapter were the test of hypothesis, and the discussion of the research findings.

b) Data Presentation

(I) (LECTURERS RESPONSES)

Table 4.1 : Responses categorized; according to, "do you think capacity planning is necessary for efficient and effective functioning among the higher institutions in Kogi State"?

Responses	Frequency	Percentage	Cumulative frequency
Yes	400	88.89	88.89
No	50	11.11	100
Total	450	100	

Source : Analysis of field survey, (2012)

Table 4.1 above reveals that 88.89% of the respondents were of the opinion that strategic capacity planning is necessary for efficient and effective functioning among the Kogi State higher institutions; while 11.11% of the respondents were of the opinion that capacity planning do not in anyway facilitate the smooth functioning of those higher institutions in Kogi State.

Table 4.2 : Responses categorized as to; "what do you think is the role of government in terms of capacity planning for those higher institutions?

Responses	Frequency	Percentage	Cumulative frequency
Provide capital and assist these institutions in ensuring effective capacity planning	10	2.22	2.22
Provide capital and ensure such capital is used for it purpose	440	97.78	100
Provide only the needed capital for the management of these institutions	-	-	
Total	450	100	

Source : Analysis of field survey, (2012)

Table 4.2 above reveals that 10 of the respondents, which represent about 2.22% were of the opinion that the provision of capital and assisting these institutions in ensuring effective capacity planning should be the role of government in capacity planning for these higher institutions; while 440 of the respondents, which represented about 97.78% were of the opinion that providing the needed capital for these institutions and ensuring that such capital are used for the purpose of which they are meant for should be the major role of government in capacity planning among the higher institutions in Kogi State. None of the respondents supported the idea of provision of capital only without making sure that such capital is actually used for the purpose they where actually meant for.

Table 4.3 : Responses categorized according to; "does your institution have a enough staff quarters"?

Responses	Frequency	Percentage	Cumulative frequency
Yes	20	4.44	4.44
No	430	95.56	100
Total	450	100	

Source : Analysis of field survey, (2012)

Table 4.3 above reveals that 95.56% of the respondents were of the opinion that their institutions do not have enough quarters for their staff; while 4.44% were of the opinion that there are enough staff quarters for the staff of their institutions.

Table 4.4 : Responses categorized according to; "are you staying in the staff quarters?

Responses	Frequency	Percentage	Cumulative frequency
No	420	93.33	93.33
Yes	30	6.67	100
Total	450	100	

Source : Analysis of field survey, (2012)

From table 4.4 above, it was revealed that 93.33% of the staff of these institutions under study stays outside the staff quarters largely due to lack of enough of these staff quarters; while only 6.67% of the staff these institutions stay in staff quarters.

Table 4.5 : Responses categorized as to, "how would you rate the effect of your staying off-campus accommodation towards your contributions for the development of quality of academic in the school?"

Responses	Frequency	Percentage	Cumulative frequency
High	300	66.67	66.67
Moderate	100	22.22	88.89
Low	50	11.11	100
Total	450	100	

Source : Analysis of field survey, (2012)

Table 4.5 above reveals that 66.67% of the respondents are of the opinion that they are highly negatively affected as far as their contributions towards the academic development of their institutions is concerned as a result of non-availability of staff accommodation for them within the school premises; 22.22% of the respondents are of the opinion that though they are negatively affected, it is moderate. While 11.11% of the respondents are of the opinion that the

effect of non-availability of accommodation for them within the school premises is low.

Table 4.6 : Responses categorized according to; "do you think in your own opinion that capacity planning strategy can help reduce infrastructural development problems in your institution?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	390	86.67	86.67
No	60	13.33	100
Total	450	100	

Source : Analysis of field survey, (2012)

Analysis for table 4.6 above reveals that 390 of the respondents which constituted about 86.67% where of the opinion that capacity of these institutions if properly planned can go along way to assist in solving the problems of infrastructures among these higher institutions in Kogi State. While 60 of the respondents, which comprises of about 13.33% of the total respondents where of this belief that capacity planning do not in any way help to solve the problem of infrastructures among the higher institutions in the state.

Table 4.7 : Responses categorized according to; does your school have a enough lecture halls?

Responses	Frequency	Percentage	Cumulative frequency
Yes	400	88.89	88.89
No	50	11.11	100
Total	450	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.7 above reveals that 400 of the respondents which is about 88.89% agreed that their institutions doe not have enough lecture halls. While only 50 of the respondents which is about 11.11% said that they have enough lecture halls.

Table 4.8 : Responses categorized as to; "what effect do lack of adequate lecture halls resulted to in the environment of study".

Responses	Frequency	Percentage	Cumulative frequency
Interfaculty conflict	-	-	-
Intra faculty conflict	-	-	-
Conflict among lecturers	-	-	-
Conflict among students	-	-	-
Poor conduct of examination	-	-	-
All of the above	450	100	100
Total	450	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.8 above reveals that 450 of the respondents which constituted about a 100% where of the opinion that the negative effects of inadequate lecture halls among others includes; inter faculty conflict, intra faculty conflict, conflict among the students, conflict among lecturers as well as poor conduct of examination.

Table 4.9 : Responses categorized according to as to; "whether your school have regular electricity supply".

Responses	Frequency	Percentage	Cumulative frequency
Yes	20	4.44	4.44
No	430	95.56	100
Total	450	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.9 above shows that 20 of the respondents agreed of regular electricity supply, which constituted about 4.44%; while 430 of the respondents disagreed and said that they do not normally enjoy regular electricity supply, this figure constituted about 95.56% of the total respondents.

Table 4.10 : Responses categorized as to; "what are the likely effect of the irregular electricity supply on the studying environment"

Responses	Frequency	Percentage	Cumulative frequency
Poor reading habit among lecturers	2	0.44	0.44
Insecurity	5	1.11	1.55
Poor quality lecture delivery	7	1.56	3.11
All of the above	436	96.69	100
Total	450	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.10 above reveals that 0.44% of the respondents were of the opinion that the effect of irregular electricity supply in the study environment is poor reading habit among the lecturers,

1.11% said it is insecurity, 1.56% said that it is poor quality lecture delivery; while 96.69% agreed that the effect of irregular electricity supply in the studying environment includes among others, all of the above.

Table 4.11 : Responses categorized according to; "who do you think should be responsible for capacity planning need of these higher institutions in question?

Responses	Frequency	Percentage	Cumulative frequency
School management	10	2.22	2.22
The government	25	5.56	7.78
All of the above	415	92.22	100
Non of the above	-	-	-
Total	450	100	100

Source : Analysis of field survey, (2012)

Analysis from table 4.11 above reveal that 2.22% of the respondents were of the opinion that the school management should be responsible for capacity planning, 5.56% of the respondents were of the opinion that it should the government; while about 92.22% of them said that capacity planning for these institutions should be the collective responsibility of both the government and the school management of the various institutions as they are both stakeholders.

(II) STUDENTS RESPONSES

Table 4.12 : Responses categorized according to; "do you think capacity planning is necessary among the higher institutions in Kogi State?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	610	93.85	93.85
No	40	6.15	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.12 above reveals that 93.85% of the respondents were of the opinion that capacity planning if properly handled is necessary for the higher institutions in Kogi State as it can be used to predict the future capacity need of any organization, be it manufacturing or services organization. While 6.15% of the respondents were of the opinion that capacity planning do not anyway help to solve the problem of infrastructural shortages among these higher institutions and as such, its application is not necessary.

Table 4.13 : Responses categorized according to; "what do you think is the role of government in terms of capacity planning for the higher institutions in Kogi State?"

Responses	Frequency	Percentage	Cumulative frequency
Provide capitals and assisting these institution in ensuring effective capacity planning	20	3.08	3.08
Provide capital and ensuring that such capital are used for the purposes they are meant to serve	10	1.54	4.62
Provide only the needed capital for these institution	5	0.76	5.38
All of the above	615	94.62	100
Non of the above	-	-	
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.13 above reveals that 3.18% of the respondents were of the opinion that government should provided capital and assist these higher institutions in ensuring effective planning of capacity of the infrastructural needs of these higher institutions, 1.54% of the respondents said that provision of capital and ensuring that such capital is used for it purpose should be the role of government in capacity planning, 0.76% of the respondents said that it should be the provision of the needed capital for capacity planning only; while about 94.62% of the respondents said that the role of government in the planning of capacity for these institutions among others, should be all of the above.

Table 4.14 : Responses categorized according to as; "does capacity planning problems causes by the inability of both the government and management of these institutions have any negative consequences on the studying environment?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	610	93.85	93.85
No	40	6.15	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.14 above reveals that 93.85% of the respondents were of the opinion that the inability of the government and the management of these institutions to effectively plan for the capacity needs of this institutions, no doubt have negative

implications on the studying environment; while 6.15% said it does not have any negative implications on the studying environment.

Table 4.15 : Responses categorized as to whether; "your school have enough lecture theatre?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	10	1.54	1.54
No	640	98.46	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.15 above reveals that most of those institutions if not all, have no enough lecture theaters where students receive lectures, as 98.54% of the respondents responded no, while only 1.54% agreed yes that they have enough lecture theatres.

Table 4.16 : Responses categorized according to; "what is the effect of these inadequate lecture theatres, if respondent's answer is "no", on the studying environment?"

Responses	Frequency	Percentage	Cumulative frequency
Interfaculty conflict	8	1.23	1.23
Intra faculty conflict	9	1.38	2.61
Affects exams conducts	11	1.69	4.3
Poor quality of lecture delivery	12	1.85	6.15
Conflict among lecturers	15	2.31	8.46
Conflict among students	6	0.92	9.38
All of the above	589	90.62	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.16 above reveals that 1.23% of the respondents were of the opinion that the consequences of inadequate lecture threatres for these institutions is that of inter-faculty conflict, 1.38% of the respondents were of the opinion that it can result to intra-faculty conflict, 1.69% were of the opinion that it can lead to improper examination conduct, 1.85% of the respondents were of the opinion that its leads to poor quality lecture delivery, 2.31% said that it can result to conflict among lecturers, 0.92% said that it can result to conflict among students; while 90.62% were of the opinion that inadequate lecture halls in these high institutions can result to all of the above.

Table 4.17 : Responses categorized according to as whether; "are you staying off or on campus?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	495	76.15	76.15
No	155	23.85	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.17 above revealed that 76.15% of the respondents stays off campus, while 23.85% of the respondents stays in the hostel.

Table 4.18 : Responses categorized according to; "what do you think are the most likely negative effect of staying off campus as a student?"

Responses	Frequency	Percentage	Cumulative frequency
Joining bad gangs	9	1.38	1.38
Insecurity	8	1.23	2.61
Irregular electricity supply	11	1.69	4.30
Landlord exploitation	15	2.31	6.61
Easily prone to accident	6	0.92	7.53
All of the above	601	92.46	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.18 reveals that 1.38% of the respondents were of the opinion that the negative effect of staying off campus is that of joining bad gangs such as; (cultism, aim robbers etc), 1.23% were of the opinion that staying off campus can easily brings about accident, 1.69% were of the opinion that one of the major problems of staying off campus is that of irregular electricity supply, 2.31% were of the opinion that when

most of the students have no option but to resolve to staying off campus it can lead to exploitation on the part of the landlords; while about 92.46% said that all of the above among others, are the consequences of students staying off campus.

Table 4.19 : Responses categorized according to as; "if "yes" that you are staying off campus how satisfactory are you?"

Responses	Frequency	Percentage	Cumulative frequency
Very satisfied	96	14.77	14.77
Highly satisfied	100	15.38	30.15
Moderately satisfied	100	15.38	45.53
Not satisfied	354	54.46	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.19 above reveals that 14.77% of the respondents said that their very satisfied staying off campus, 15.38% of the respondents said they were highly satisfied staying off campus, 15. 38% of the respondents also said they are moderately satisfied staying off campus; while 54.46% of the respondents said they are not satisfied staying off campus at all.

Table 4.20 : Responses categorized according to; "do you prefer staying off campus?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	210	32.31	32.31
No	440	67.69	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.20 above reveals that 32.31% of the respondents agreed that they enjoy staying off campus; while 67.69% said they preferred staying on campus.

Table 4.21 : Responses categorized as to; "if "No" that you do not like staying off campus, why did you chose to stay off campus than?"

Responses	Frequency	Percentage	Cumulative frequency
No hostel accommodation	600	92.31	92.31
It's optional	35	5.38	97.69
No reason	15	2.31	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.21 above reveals that 92.31% of the respondents gave their reason of staying off campus to be lack of accommodation in the hostel, 5.38% said that their staying off campus is just optional; while 2.31% said that their staying off campus do not have any reason.

Table 4.22 : Responses categorized according to; "Are you staying in the hostel?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	205	31.54	31.54
No	445	68.46	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.22 above reveals that 31.54% of the respondents resides in the hostel; while about 68.46% of the respondents stays off campus.

Table 4.23 : Responses categorized are according to; "if you are residing in the hostel, how many students officially are supposed to occupy a room?"

Responses	Frequency	Percentage	Cumulative frequency
4-6 students	490	75.38	75.38
7-9 students	160	24.62	100
10 – 12 students	-	-	-
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.23 above reveals that 75.38% of the respondents were of the opinion that officially a room in the hostel supposed to take about 4 to 6 students, 24.62% of the respondents were of the opinion that a room is the hostel officially supposed to accommodate between 7 to 9 students; while we recorded zero % against 10 to 12 students. From the analysis, research reveals that for students in the hostel to be comfortable enough, they must not exceed 4 to 6 students in a room. But experience and from the interview conduct, it was revealed in most of these high institution that more than 4 to 6 students usually occupies a room, as most of them try to help their friends by accommodating them illegally. At time, a room which originally is meant to accommodate 4 to 6 students or 7 to 9 students as the case may be, would not be occupied by 10 to 12 students and at times, even more.

Table 4.24 : Responses categorized according to, "if you are staying in the hostel but with someone, what effect does it have on your studies?"

Responses	Frequency	Percentage	Cumulative frequency
Negative	605	93.08	93.08
Positive	-	-	-
No effect	45	6.92	100
Total	650	100	

Source : analysis of field survey (2012)

Analysis from table 4.25 above reveals that 93.08% of the respondents were of the opinion that the effect of staying with a friend in the hostel is of negative one, 6.92% of the respondents said that staying with a friend in the hostel do not have any negative effect on them, while zero % was recorded under positive effect of staying with someone rather than you having your own bed space in the hostel.

Table 4.25 : Responses categorized according to, "what do you think staying in a crowded room in the hostel as a student can result to?"

Responses	Frequency	Percentage	Cumulative frequency
Sicknesses and diseases	18	2.77	2.77
Theft	170	26.15	28.92
Frequent conflict	175	26.92	55.84
All of the above	287	44.15	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.25 above reveals that 2.77% of the respondents were of the opinion that the resultant effect of staying in a crowded room is sickness and diseases, 26.15% said is theft, 26.92% said is frequent conflict; while 44.15% said that the resultant effect of staying in a crowded room is all of the above.

Table 4.26 : Responses categorized according to; "does your school have regular electricity supply?"

Responses	Frequency	Percentage	Cumulative frequency
Yes	200	30.77	30.77
No	450	60.23	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.26 above reveals that 30.77% of the respondents were of the opinion having regular supply of electricity; while 60.23% were of the opinion not having regular supply of electricity.

Table 4.27 : Responses categorized according to; "what are the likely negative effect of irregular electricity supply on the studying environment?"

Responses	Frequency	Percentage	Cumulative frequency
Can causes poor reading habit	52	8	8
Academic failure if it becomes too often	43	6.62	14.62
Students unrest	85	13.03	27.7
Insecurity	100	15.38	43.08
Can affect quality lecture delivery	40	6.15	49.23
All of the above	330	50.77	100
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.27 above reveals that 8% of the respondents agreed that irregular supply of electricity can cause poor reading habit among the students, 6.62% agreed that irregular electricity supply can bring about students unrest, 13.08% said that it can resulted to insecurity, 6.15% agreed that it can affect quality of lecture delivery; while about 50.77% of them said that it can resulted to all of the above, among others.

Table 4.28 : Responses categorized according to; "who do you think should be responsible for capacity planning need of the high institutions in Kogi State?"

Responses	Frequency	Percentage	Cumulative frequency
The school management	150	23.08	23.08
The government	120	18.46	41.54
All of the above	380	58.46	100
Non of the above	-	-	-
Total	650	100	

Source : Analysis of field survey, (2012)

Analysis from table 4.28 above reveals that 23.08% of the respondents were of the opinion that capacity planning should be the responsibility of the school management, 18.46% said that it should be the

responsibility of the government, while 58.46% of the respondents were of the opinion that both the school management and the government should be responsible for the planning of capacity.

c) Test of Hypotheses

Test of Hypothesis I

To test the first stated hypothesis, the following simple regression model was employed:

$Y = A+BX+U$

Where:

Y =Dependent variable (infrastructural needs)
A = The constant, meaning the level of infrastructural development, when the government practice zero capacity planning
B = coefficient of the parameter value of X
X = Independent variable, (level of capacity planning).
U = Stochastic error term.

The equation becomes: $Y = A_0 + B_0X_1 + U_1$ with the use of ordinary least square (OLS) method.
Where:

Y = estimated value of y

The various estimates of A_0 and B_0 are derived thus:

$$A_0 = Y - B_1X \text{ and } B_0 = \frac{XY}{X^2}$$

From the data analysis, the following regression result were obtained.

Y = 141.666 - 1.412x
S(bi) = 0.0204
R = 1.996
T(bi) = 138.8
F- test = 356.006
R^2 = 1.98
d* = 0.66

Interpretation of the above Results; with the simple regression model given as thus:

Y = 141.66 + 1.412X

The result shows that:

i. Y, the dependent variable which is the infrastructural need is linearly related to X the independent variable, which is the capacity planning level. This linear relationship is indicated by the value of Bi which is (+1.412). This indicates that 1% increase in the level of capacity planning leads to 1.412% increase in the advancement of infrastructural development within the period under consideration.
ii. The constant (141.66*) shows that with zero levels of capacity planning, there would be a decrease (shortages) of about 141% in the level of infrastructural development among the higher institutions in Kogi State within the period under review.
iii. Correlation coefficient (R): The value of R given as +1.996 shows that there is a positive perfect correlation between strategic capacity planning and the level of infrastructural development among the higher institutions in Kogi State. The implication of this is that, as the effort towards strategic capacity planning increases, the level of infrastructural development among the higher institutions also increase within the period under review. This proactive major among the policy makers of these higher institutions would helps to overcome this problem of infrastructural shortages among these higher institutions in Kogi State.
iv. Coefficient of determination (R^2): The value of R^2 given as 1.98 indicates that the regression model is of a good-fit and it is accurate. It means that, the regression line is a good-fit to the observed data since the line explains 100% of the total variation of the level of infrastructural development among the higher institutions in the state under consideration, within the period under review around the mean.
v. Standard error test: the value of the standard error of the estimated B_0 is given as 0.02036. This shows that the estimate is statistically significant. This is because $S(B_0) < (B/2)$. We reject the H_0 because the explanatory variable X (strategic capacity planning effort contribution towards the infrastructural development among the higher institutions in Kogi State) to which the estimate relates, does as a matter of fact, influence the dependent variable (Y) that is, increase in the level of infrastructural development among the higher institutions in Kogi State.
vi. The T-test: T^* as shown on the regression result is 56.006. It implies that at 0.05 level of significance, F-tabulated, that is; $t_{0.05}$; 2.7 = 8.42. That is to say; cal α 0.05 = 56.006 and tab α 0.05 = 8.42. From the above therefore, t^*- cal α = 56.006 > t - tab α 0.05 = 8.42. Hence, it can be concluded that the entire regression is meaningful. We reject the H_0 and accept that the regression is significant. That is, lack of strategic capacity planning is significant explanatory factor for the problem of infrastructural facilities shortages among the higher institutions in Kogi State.

Test of Hypothesis II:

Hypothesis II was tested to determine as to whether lack of proper capacity planning has any negative implications on the environment of study among the higher institutions in Kogi State. Using a table of responses obtained from the respondents of the three (3) higher institutions selected as the study areas as shown in tables 4.3.1 and 4.3.2 below, we have a derivative result table as showed in table (4.3.3 and

4.3.4) below. To test this hypothesis, the ANOVA statistical model was used.

Table 4.29 : Below shows the responses from the respondents, which comprises of both the male and female students (respondents) sample size of the three (3) selected higher institutions:

Respondents	Response (Yes)	Responses (No)
Male students	350	26
Female students	250	24
Total	600	50

Source : Field survey, (2012)

Table 4.30 : Showing the responses of staff (respondents) of the three selected higher institutions:

Respondents	Response (Yes)	Responses (No)
Male students	250	20
Female students	150	23
Total	400	50

Source : Field survey, (2012)

Table 4.31 : Showing the results obtained from table 4.3.1

	Sum of Square	Degreed of Freedom	Mean Square	F – ratio
Factor	48	2	48	87.67
Error	16,832	8	4208	
Total	16,880	10		

Source : Analysis of field survey, (2012)

From table 4.31 above, the cal α F-ratio, value was 87.67. To obtain the tab α F-ratio value, we used $\alpha = 0.05$ as the significance level; while the degree of freedom for the numerator and denominator from table 4.3.3 are 2 and 8 respectively. Therefore, the critical value for F-ratio from the F-ratio table was 7.81. From the analysis and the result table was 7.81. From the analysis and the result obtained above, it was revealed that F-cal α=87.67 and the F-tab α 0.05 = 7.81. This mean that F-cal α 0.05 =87.67> F-tab α 0.05 = 7.81. Hence, we reject the H_0 that lack of proper capacity planning by the government for its higher institutions do not have negative implications on the environment of study, and accept that H_I that lack of proper capacity planning by the government do have negative implications on the environment of learning among these higher institutions in the Kogi State.

Table 4.32 : Showing the results obtained from table 4.3.2 above:

	Sum of Square	Degreed of Freedom	Mean Square	F-ratio
Factor	20	2	20	71.25
Error	9, 250	6	1,425	
Total	9,270	8		

Source : Analysis of field survey, (2012)

From table 4.32 above, the cal α F-ratio value was 71.25; while the tab α F-ratio value at 5% significance level, was 6.95. The result reveals that cal α F-ratio at 0.05 significance level is greater than the tab α F-ratio value. That is, cal α F-ratio of 71.25 > tab α 0.05 F-ratio of 6.95. That on the basis of the above result of F-cal α 0.05 = 71.25 > F-tab α 0.05 F-ratio = 6.95, we reject the H_0 and role that improper capacity planning for the higher institutions in Kogi State have a negative implications on the environment of learning.

d) Findings and Discussion

Analysis of the results in table 4.1 on the question as to, "whether capacity planning is necessary for predicting efficient and effective functioning among the institutions in Kogi State", the result revealed a favourable outcome, as about 88.89 percent of the staff agreed that if properly planned and implemented, capacity planning can be used to predict the development of infrastructural need of the higher institutions in Kogi State.

Analysis of results in table 4.2 on the question as to what should be the role of government in the planning of capacity for these higher institutions in the state, the over whelming responses was that the provision of the needed capital for capacity planning and ensuring that such capital is judiciously used for the purpose for which it is meant for was the major opinion as this gave us about 97.78 percent.

Analysis of results in table 4.3 on the question as to whether the staff of these institutions have enough staff quarters yielded a negative responds, as about 95.56 percent were of the opinion that there are no enough quarters for the staff.

Analysis of results in table 4.4 revealed that most of the staff of these institutions have no accommodation in the staff quarters, as there are no enough of them. The percentage recorded against this response was 93.33 percent.

Analysis from the results in table 4.5 revealed that strategic capacity planning for the infrastructural development of these high institutions can go along way, standing a test of time in helping the to solve the problem of infrastructural needs for these high institutions. The implication of this result is that through capacity planning the government and the management of these institutions tends to be proactive thereby helping them to predict the future infrastructural need of these institutions. And again, the percentage recorded against this result was 86.67 percent.

Analysis of results obtained from 4.6 revealed that most of these institutions do not have enough lecture threats. The percentage recorded against this finding was 88.89 percent.

Analysis of result obtained from table 4.7 revealed that the negative effect of this inadequate lecture halls among these institution with a percentage

of 100, include the following among others: inter faculty conflict, intra faculty conflict, conflict among, lecturers, conflict among students and Poor conduct of examinations.

Analysis of results obtained from tables 4.8 and 4.9 with 95.56 and 96.69 percents recorded against them respectively, reveals that, on the whole, most of these institutions experiences the problem of irregular electricity supply. And the resultant effect of this irregular power supply as revealed in table 4.10 include among others the following: poor reading habit among the lecturers, insecurity and poor quality lecture delivery

Analysis of results obtained from table 4.11 with a percentage of 92.22 revealed that both the government and the management of these various institutions should be responsible for capacity planning of the infrastructural need of these high institutions.

Analysis of results obtained from table 4.12 with 93.85 percent is in agreement with results obtained from table 4.1 that capacity planning is of paramount importance's in the development of infrastructures for the higher institutions in Kogi State.

Analysis of result from table 4.14 seems to be in agreement with the opinion table 4.2 which stated that the role of government in capacity planning should be that of capital provision and ensuring that such capital is used for the purpose it is meant for. Their area of dichotomy however is that unlike the submission in table 4.2 results from table 4.14 revealed that apart from the role of government as agreed by the two results above other, role of government in capacity planning for these higher institutions should include among others the following:

- Providing the needed capital and assisting the management of the institutions in ensuring effective capacity planning.
- And at times, government can provide the needed capital only while allowing the management of these institutions to planning their own capacity. The percentage recorded in favour of the above finding was 97.78 percent.

Analysis of results as revealed in table 4.3, with about 95.56 percent shows that most of these high institutions do not have enough staff quarters.

Analysis of results from table 4.17 reveals that 90.62 percent of the respondents agreed that the consequences of these inadequate infrastructural facilities among others include: inter faculty conflict, intra faculty conflict, poor quality lecture delivery, affects examinations conduct, conflict among lecturers and conflict among students

This finding also agreed with the findings from table 4.8 on the analysis of data carried on the staff of these institutions.

Analysis of results from table 4.19 revealed that 92.46 percent of the students of these various institutions were of the opinion that the negative effect of staying off campus among others include: high possibility of joining bad gangs, insecurity, irregular electricity supply, landlord exploitation and easily prone to attack as well as accident

Analysis of results from table 4.20 reveals a mixed responses from the students, with 14.77 percent agreed to be very satisfied staying off campus, 15.38 percent said they where highly satisfied staying stay off campus, 15.38 percent agreed of been moderately satisfied; while about 54.46 percent agreed not been satisfied staying of off-campus. That the only reason why some of them have to stay off-campus is because, they do not have any option, as there are no accommodation for them on campus.

Analysis of results from table 4.23 reveals that officially 4 to 6 and 7 to 9 students respectively as the case may be were supposed to occupy a room. The percentages recorded against this submission were 75.38 and 24.62 percents respectively.

From the interview conducted however, research reveals that in most of these institutions if not all, about 12 to 16, 17 to 20 students as the case may been occupies a single room in the hostel.

From our findings in tables 4.24 and 4.25 respectively, research revealed that there are negative effects associated with staying in such crowded environment as revealed in table 4.25 with a percentage of about 44.15. These negative effects that can resulted from staying in a crowed room according to the respondents among others include; sicknesses and diseases, theft, frequent conflict among the students.

Analysis of results from tables 4.26 and 4.27 reveals that in most of these institutions, they normally experience irregular electricity supply, and this irregular supply of electricity is not without its cost implications such as; poor reading habit, failure in academic as a result of poor reading habit, students unrest, insecurity, poor quality lecture delivery and so on.

Analysis of result from table 4.28 agrees with the results obtained in table 4.11 The research findings from both analysis with 92.22 percent for table 4.11 and 58.46 percent for table 4.28, reveals that both the government and the management of these various institutions should be responsible for capacity planning of infrastructural needs of the high institutions.

Results of the test of hypothesis I shows that Y the dependent variable (ie infrastructural needs) is linearly related to X the independent variable (ie level of capacity planning). This linear relationship was indicated by the value of Bi, which is (+1.412). This means that for every one percent (1%) increases in the level of capacity planning there would be an increases in the enhancement of infrastructural needs of about 1.4 percent within the period under review.

The constant value obtained from the test of hypothesis was (141.666). This value revealed that with

zero level of capacity planning, there would be a shortage of about 141 percent in the level at infrastructural needs of these high institutions within the period under review.

The result of correlation coefficient (R) obtained from the test of hypothesis I was +1.996. This result shows a perfect relationship between the level of capacity planning and the level of infrastructural needs among these institutions within the period under review. The implication of this result is that, as the effort towards strategic capacity planning increases, the enhancement level of the infrastructural needs of these institutions also increases in within the period under review. The resultant effect of this, is that the proactive measure by these policy makers would help to predict the present and the future infrastructural needs of these institutions, so as to overcome this problem of infrastructural shortages among these higher institutions in the state.

From the test of hypothesis I also, the t-test value computed was 56.006 at 0.05 level of significance; while the table value at 0.05 level of significance was 8.42 (i.e $t_{0.05}$ tab α = 8.42 & $t_{0.05}$ cal α = 56.006). This implies that cal α = 0.05 = 56.006 > tab α = 0.05 = 8.42. We therefore reject the H_0 and accept H_I, that lack of adequate strategic capacity planning is a significant explanatory factor for the problem of infrastructural facilities shortages among the higher institutions in Kogi State.

From the test of hypothesis II for both categories (i.e staff and student), research revealed that in both cases, the (F-cal α = 0.05 = 87.67 > F- tab α = 0.05 = 7.81) and also in the other case, (F- tab α = 0.05 = 71.25 > F- tab α = 0.05 = 6.95). It was ruled that since in both cases, the F- cal α = 0.05 >F- tab α = 0.05, we reject the H_0 and rule that improper capacity planning for the higher institutions in Kogi State no doubt, have contributed to the gap between infrastructural needs (demand) and those available (supply). And because the need for these infrastructures is more than what is actually available, it has resulted to shortages. And these shortages of infrastructural needs no doubt have negative consequences on the environment of learning.

V. Summary of Findings, Conclusion and Recommendations

a) *Summary of Findings*

This study was undertaken to assess the implications of capacity planning of infrastructural development needs in Kogi State Higher Institutions. The study however, was restricted to some selected higher institutions in Kogi Ea|st. To this end, the findings in summary form are:

1. If properly planned and implemented, capacity planning can be used to predict the infrastructural need of these higher institutions in state.
2. Both the government and the management of these institutions should be responsible for the planning of capacity for these institutions.
3. It was revealed among other roles, government role in capacity planning should include the provision of capital and ensuring that such capital is used for the purpose it is meant for.
4. Most of the staff of these institutions stay outside the campus, as the staff quarters are not enough to accommodate them.
5. Most of these institutions if not all, do not have enough lecture theaters.
6. The cost implications of this inadequate lecture theaters among others include: inter-faculty conflict, intra-faculty conflict, conflict among lecturers, conflict among students, poor quality lecture delivery and poor conduct of examinations
7. There are not enough hostel accommodations for most the students of these institutions.
8. Most of the students stay off campus, with the following cost implication among others: joining bad gangs, insecurity, irregular electricity supply, landlord exploitation and easily prone to accident and other dangers.
9. Result from hypothesis using simple regression analysis, correlation coefficient and F-test revealed that a linear relationship exist between strategic capacity planning and the level of infrastructural development needs of these institutions.
10. The implication of this is that, for every 1% increase in the level of capacity planning, there would be a correspondent increase in the enhancement of infrastructural development needs of about 104% within the period under review.
11. Result of correlation coefficient(R) shows a perfect relationship between capacity planning and level of infrastructural needs of the institutions. This means that as effort towards strategic capacity planning increases, the enhancement level of the infrastructural needs of these institutions within the period under review also increases.
12. Results also revealed that, in the t-test, the calα 0.05>tabα 0.05. Therefore, H_o was rejected and H_1 accepted i.e. lack of adequate strategic capacity planning for these institutions is a significant explanatory factor for the problem of infrastructure facility shortages among these institutions in Kogi State.
13. Moreso, result from the F-test revealed that calα 0.05 = 71.25>tabα 0.05 =6.95, and also, calα0.05=87.67>tabα 0.05=7.81, the H_o was rejected and it is observed that improper capacity planning for these higher institutions in Kogi State no doubt, have contributed to the shortages being presently face by both the staff and students of these institutions.

b) Conclusion

Based on the findings of this research work, the following conclusions have been drawn: Capacity planning is an important aspect of any organization, be it a service or a manufacturing organization. Capacity planning can be used to predict the future need of an organization.

The inability of many organizations to strategically plan for the further need of their organization have resulted to most if these organization taken a reactive measure instead of a proactive measure that would have placed them in a competitive sustainable advantage.

We discovered also from the study that both the government and management of these institutions should be responsible for capacity planning need of these institutions.

From the foregoing, we discovered that these institutions have capacity planning problems. Both the government and the management of these institutions from our findings are yet to live up to their expectation as far as capacity planning of the infrastructural needs of these institutions are concerned.

Based on the aforementioned, shortages of infrastructures of all kinds such as hostels, lecture theatres, electricity supply, water supply are evident. The resultant effects of these shortages among others includes insecurity, conflict between students and students, conflict between lectures and lectures and soon. Which ever way, it was concluded that, as effort towards strategic capacity planning increases, the level of infrastructural development tends to be improved. Based on this submission therefore, it was concluded that lack of adequate strategic capacity planning for these institutions is a significant explanatory factor for the problem of infrastructural facility shortages among the institution in Kogi State. The above predicament can however be overcome if a proper and well planned capacity structure is putted in place.

One of the identifiable limitations of this research study however, is, though the topic is researchable, has very little by way of previous research effort made in the area.

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