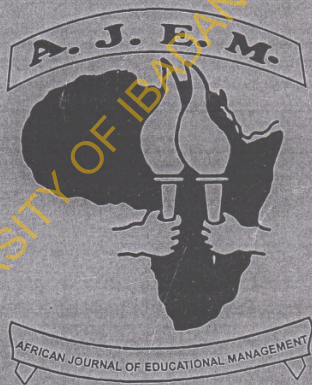


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Theses Information System of the Postgraduate School, University of Ibadan

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Abstract

This study analysed the existing theses information storage and retrieval system of the Postgraduate School, University of Ibadan during the period of study (1994-96). It examined the factors that affected the effectiveness and efficiency of the system and with the intention of deriving some guidance for the design of an efficient theses information storage and retrieval system for the Postgraduate School. A computerized information system was found to be more suitable than the manual information system, as it was more efficient, and hence was recommended for use.

Introduction

This paper examines the characteristics and performance of the existing manual theses information storage and retrieval system of the Postgraduate School, University of Ibadan. The object of the analysis is to identify the factors affecting the effectiveness and efficiency of the system and with the intention of deriving some guidance for the design of an efficient theses information storage and retrieval system for the Postgraduate School. Previous studies indicate that the manual information storage and retrieval systems are not adequate for modern day need (Raya, 1987; Samuel, 1992, and Zhengxin, 1994).

Measures of information retrieval system performance often include system's retrieval speed, degree of utilization of the system, or the data base coverage of those documents potentially of interest to searchers. Of greatest concern to many information searchers, researchers and practitioners are measures of technical quality of the documents or document sets that are retrieved (Roberts, 1995).

Examination Section

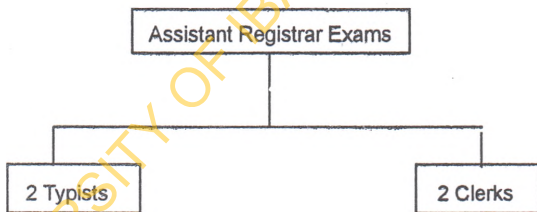
Examination section is one of the five sections in the Postgraduate School. The Assistant Registrar (Examinations), who is the head of the section, when interviewed, explained the functions of this section as:

1. To facilitate the conduct of oral examinations for research students.

2. Issuance and notification of Higher degrees' (Master and Ph.D.) results.
3. Preparation of list of graduands for convocation.
4. Booking of accommodation for external examiners.
5. Issuance of examination materials to the departments.
6. Preparation of examination items for senate.
7. Receiving theses from the departments — This involves stamping the thesis, signing, writing the student's name, as well as recording the effective date of the award.
8. Distribution of received theses to:
 - (i) The main library
 - (ii) The department
 - (iii) The student.

The personnel of the Examination Department is made up of five members of staff: two typists, two clerks and one sectional head who is the Assistant Registrar (Examination). Figure I represents a diagrammatic sketch of the organisation of the section.

Fig. 1: *Personnel Structure of the Examination Section*



The Postgraduate Degrees

The Postgraduate degree of the University are of two kinds:

- (a) those that are awarded through examination based on course work,
- (b) those that are awarded through the submission of dissertation/theses on approved research topics.

The Examination Section of the Postgraduate School handles all matters pertaining to examinations, including theses and dissertations. Dissertations are submitted through the departments to the Postgraduate School for the award of Masters degrees, while theses are submitted through the departments for the award of Doctoral degrees. Four of the six copies of theses submitted by a doctoral degree candidate are brought

to the postgraduate school after the student has passed the oral examination. One copy is for the student. Another copy for the department. Two copies are sent to the main library. No copy is retained by the Postgraduate School, as the Postgraduate School normally submits two copies to the Main Library due to lack of space for storage. This implies that the Postgraduate School only has a list of all theses submitted to the school and cannot assist researchers with the theses or abstracts of these theses either manually or electronically.

The Problem

The problem of this study is the inefficiency inherent in the manual theses information system, which culminated in waste of precious human efforts and time.

The following research questions guided this study:

1. What type of theses information storage and retrieval system was being operated in the Postgraduate School of the University of Ibadan during the study period?
2. Was the existing theses information storage and retrieval system adequate for the operational needs of the school?
3. What alternative theses information storage and retrieval system could be introduced?
4. How feasible was the alternative theses information storage and retrieval system?

Methodology

Participant observation and interviews methods were used for this study. The key officers and the Head of Computer Section were interviewed. Appropriate records were inspected, particularly records on theses information storage and retrieval system.

Research Question One

What type of theses information storage and retrieval system was being operated in the Postgraduate School of the University of Ibadan during the study period?

The existing theses information system was the manual type. The tasks performed with the existing information system include:

- receiving the theses from the various faculties;
- acknowledging the receipt thereof;
- recording information about the submitted theses on sheets of paper;
- distributing the theses to:
 1. the main library

2. the department
 3. the student.
- storing the Postgraduate School's copies of the theses in the examinations officer's office for not longer than a year, and
 - evacuating the theses to the main library when there is no longer space to store them.

Research Question Two

Was the existing theses information storage and retrieval system adequate for the operational needs of the school?

The existing theses information storage and retrieval system was not adequate. There was difficulty in having access to past research works carried out by doctoral degree students due to the way their theses are kept. In an ideal situation, copies meant for the postgraduate school were to be arranged on the shelves in a room or preferably a Postgraduate school library where they would be easily accessible to potential users. Unfortunately this was not so.

Information can not be easily located because there was no systematic arrangement of theses to enable easy retrieval. They were just dumped there, haphazardly. A query could not be replied or answered, because it involves a time consuming manual search.

Retrieval of information on these theses proved very difficult as there are a lot of theses stacked up in the examination officer's room. Searching for particular theses were difficult because they were just dumped there without any form of arrangement.

There was no way one could know at a glance the number of students that had been supervised by a particular supervisor (lecturer) nor can one say the number of theses submitted so far since the establishment of the postgraduate school. The theses were available at the main library of the University, but there was no comprehensive and easily searchable records for them in the postgraduate school nor in the library for that matter.

There was little chance that the submitted theses were accessible to potential users. This was because all the theses were evacuated to the main library of the university by the postgraduate school and searchers may not necessarily be interested in going through the complex and boring procedure of getting the needed information. Time and effort were wasted in getting the abstracts of the theses that were relevant to a user's request.

Research Question Three

What alternative theses information storage and retrieval system could be introduced?

Two alternatives to overcome the above constraints of the manual system were assessed, and found to be better than the manual system in terms of efficiency and cost.

Alternative 1: Improved Manual System

The first option was to continue with the existing manual system, with some improvement in order to lift it from its deplorable condition for effectiveness and efficiency of the storage and retrieval of these information. Things to be done for improvement are:

1. Buying of one photocopier to make photocopies of the abstracts of theses submitted.
2. Acquiring one insulated file cabinet for keeping the photocopies of theses' abstracts.
3. Buying of stationary to do photocopies and office work on theses.
4. Buying of one electric typewriter to type the needed information extracted from the theses.

Alternative 2: Full Automation

Full automation involves an outright change over from the old system and its replacement with a new system. In this option, computers would be introduced in the examination section to perform the following tasks.

1. Storage of theses information in form of abstract, supervisor's name, name of the student, title, year, department, faculty, and descriptors.
2. Edit the information when and where necessary.
3. Updating the theses information as more are received.
4. Retrieval of the needed information about the theses.

Things to be done for alternative 2 were:

1. Acquisition of a computer system
2. Development of a software application program that would contain storage, search and retrieval facilities of theses information.
3. Acquisition of file cabinet to store the hard copies of theses' abstracts.

Research Question Four

How feasible was the alternative theses information storage and retrieval system?

Feasibility study is used in management as a tool to evaluate the practicability, workability and probable cost of developing a new system. That is, it is used to determine the most feasible alternatives in the light of technical, operational and economic factors (Fabunmi, 1996).

The operational, technical and economic feasibilities of each of the alternatives suggested were examined for a final selection of one of them for implementation.

Operational Feasibility

This was to determine if the proposed system will work within the work setting. The system development request came from the management. The management of the postgraduate school was trying to solve space problem (i.e. their inability to put up more structures for the storage of the theses due to financial constraints). The management wanted computerization of theses information which requires less space and which could be manipulated to perform so many complex operations which could be time-consuming if they were to be done manually.

The management equally wanted to offer better services within available limited resources to the potential users of the theses information.

The two alternatives were operationally feasible. However, the above expectations of the postgraduate school showed that alternative 2 was preferred to alternative 1. This is because, there were adequate management and staff support for a change. Although it was more expensive than the first alternative, but it was more effective and efficient than the first alternative.

Technical Feasibility

This deals with the technology and the know-how required in the design and implementation of the alternatives suggested. Technically, alternative 1 was feasible. This is because, the workers were capable of using this alternative. Alternative 2 was equally feasible to some extent. The school needed to employ a programmer or a system analyst for the alternative to take off. In addition, the Postgraduate School had two corporers with B.Sc. in Computer Science who could be used for take off. There were computers that can carry out the second alternative in the record section, all that needed to be done was to give this section more responsibility. There were hardware, software and application packages or programs which could be used to operate the computer system. Having given the technical feasibility careful study, it was discovered that alternative 2 was the best alternative, hence alternative 2 was preferred.

Economic Feasibility

In this, availability of financial resources needed to implement and sustain the system were looked into. The two alternatives were feasible economically. The capital outlay for the first alternative was less than that of the second alternative. However, in the two alternatives, certain things had to be put in place before implementation. This is because the Postgraduate School had computers as well as typewriters needed to carry out the operation.

Cost

The cost of implementing the suggested alternatives are the only costs which have been considered here. The costs of running the two systems for a year are shown in tables I and II below.

Table 1: Cost of Manual System

S/N	Items	Cost (₦)
1	Photocopier	120,000.00
2	Electrical Typewriter	100,000.00
3	Training of staff (4)	10,000.00
4	Comprehensive maintenance (10%) of total cost (hardware)	2,200.00
5	Insulated file cabinet	30,000.00
6	Contingency	5,000.00
7	Stationery	30,000.00
	TOTAL	297,200.00

Source of Prices: Odusote Bookshop, Oke-Bola, Ibadan, Idea Konsult, Dugbe, Ibadan.

Table 2: Alternative 2 Capital Costs

S/N	Qty.	Description	Unit Price (₦)	Total Price (₦)
1	1	486DX Tower case microcomputer 33mhz speed 214 MB Hard Disk 4MB Ram 16 bit processor AT Keyboard 3.5" & 5.25" HD drives Dos 6.0	198,276	198,276
2	1	Uninterrupted Power Supply (1500 VA)	85,569	85,569
3	1	Tape Streamer	15,875	15,875
4	1	HP Laser Jet IV Printer	165,000	165,000
5		DBase IV (2.0 version)	41,656	41,656
6	2	Airconditioner (2HP)	15,000	15,000

7	4	Training of staff	20,000	20,000
8	1	Norton Utilities (7.0)	15,000	15,000
9	1	Stabilizer	45,000	45,000
10	2	Fire Extinguisher	21,250	42,500
11	1	Insulated File Cabinets	30,000	30,000
12		Operation Software (Thesis)		300,000
14	1	Epson LQ 1170 Printer	89,000	89,000
		TOTAL		1,137,876

Source of Prices: Odusote Bookshop, Oke-Bola, Ibadan, Idea Konsult, Dugbe, Ibadan.

Table 3: *Operating Expenses For Alternative 2*

S/N	QTY	Description	Unit Price (₦)	Total Price (₦)
1	10	Ribbon (Epson)	650.00	6,500.00
2	4	HP Laser Jet 4Si Toner Cartridge	10,500.00	42,000.00
3		Stationery		30,000.00
4		Contingency		5,000.00
5		Maintenance (10% of cost of hardware)		113,787.60
		TOTAL COST		197,287.60

Table 4: *Total System Development Cost for Alternative 2*

Description	Price (₦)
Capital Cost	1,137,87.00
Operating Expenses	197,287.60
Contingency	5,000.00
Grand Total	1,340,163.60

A careful study and analysis of the existing system reveals that the existing system was gradually becoming inadequate for the massive theses handled by the postgraduate school. Despite the economic condition, many people were still coming for their postgraduate studies. Therefore, the study's suggestions were based on the need to provide an

alternative system that could efficiently meet the demand for information on the past doctoral researches submitted to the postgraduate school.

Alternative 1

Alternative one could be chosen for feasibility reason. At the analysis stage of both the economic, technical and operational feasibility of the system, it was discovered that the organization could fund the new system. However, this alternative was inadequate to get the best result out of the theses information storage and retrieval system.

Later this alternative may not be able to measure up to the standard expected when the workload increase.

Alternative 2

The full automation, using data management program has been suggested for efficient and effective handling of theses information storage and retrieval. This alternative was specifically suggested to enhance efficiency and effectiveness. There was the need to rectify the inadequacies of the existing system, while carrying out greater functions which manual operations cannot handle.

Having considered the results of the analysis of this study, (especially the numerous problems found with the existing system) as well as the limits imposed by various alternatives, the second option was chosen, because the organization had computers and printers that were capable of carrying out the task of a computerized system.

The choice of this option was based on the principle of automation, thus all the advantages of an automated information system would be achieved, and these advantages include:

- easier and faster access for users to appropriate and adequate information,
- the ease of manipulation of the information available in the system,
- adequate control of the access to and use of the information available in the system,
- the information available in the system would be up-dated at minimal costs, and
- the computerized system would boost the morale of the personnel of the organization, resulting in increased productivity and ultimately increasing the patronage of the services provided by the organization.

In summary, automated systems are more powerful than manual systems. They store more data and support manipulation of data more easily than manual systems do. In addition to special capabilities that are highly flexible, computers perform clerical processes much faster than

human beings, and thus, can easily execute tasks that would require a prohibitive amount of time in manual systems.

In addition, most databases of reasonable sizes, if not all of them, are actually designed to be operated on a computer. With the wide use of microcomputers, and the large variety of software available for them, even a small organization or one with limited financial resources is likely to select an automated option for its database.

Again, it is better to build good habits by having a standard computerized database in mind because its design forces explicit definition of every element in the design. Manual systems seem immediate and concrete, and therefore, induces the illusion that they can be designed using intuition only.

Above all, computerized database too are expected to provide the most specific and accurate answer to a user's request without any requirement for further processing of information.

Again, the cost of total system development of Alternative 1 was ₦297,200.00 while that of the second alternative was ₦1,340,163.60. By looking at the capital outlay involved, one would be tempted to choose alternative 1, but alternative 2 was chosen because, it will pay the organization better on the long run. The analysis of the costs are stated in Tables 1-4.

Conclusions

The discussion so far indicate that the existing manual theses information storage and retrieval system had become inadequate for the massive theses handling in the postgraduate school. A computerized information storage and retrieval system was found to be economically and technically feasible.

Recommendations

The inefficiency of the manual theses information storage and retrieval system informed the following suggestions:

1. Computerization of the theses information storage and retrieval system;
2. Acquisition of appropriate hardwares and softwares,
3. Computer training facilities should be provided for the staff, so as to make them suitable for the new theses information system.
4. Fire detection and protection devices should be provided.
5. Adequate disaster control planning and implementation should be seen as an issue that is of great importance, and
6. Adequate physical security control should be organized in this section.

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