

Transcript Management System for Sa'adatu Rimi College of Education, Kano, Kano State

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Abstract

This research identified the problem that was existing in the old system of operation, which was designed using the waterfall model and had specifically come up with a more effective system that would not only counteract that problem but also provide a detailed future plan that would give room for more improvement in the use of information technology in the transcript system of the institution. This research work was limited to the provision of a digital transcript's information management system that electronically handles students' record, to enable easy accessibility and information flow within the Sa'adatu Rimi College of Education Kano. The result of the analysis of the new computerized transcript management system of institution shows implementation of the functional features involving a careful conversion processes of physical records into electronic files based on a slight change in the stipulated procedures that considers sufficient time, the knowledge and training of the functions and operation of the new system of the staff that would extensively use such trainings for the new system in the College.

Keywords: Information Management, Transcript Management System, Software Development, Waterfall model.

INTRODUCTION

Information Technology (IT) had played a critical role in different facets of life including the educational aspects and sectors. The deployment of IT in the knowledge economy has impacted positively on organizational improvement in terms of performance as a result of its dependence on it. According to Taylor (1980) the IT deployment involved the computer-based education that were assisted by instructional programs interacting with students in academic societies and institutions with a variety of applications as simulations that depended on the needs and levels of education.

As a result, the impact of IT in education as suggested by Cole (2010) with his earlier postulation of a more effective way of managing the complexity and sophistication of information management needs to be implemented to meet the demand of stakeholders in education including students. This includes the provision of a conducive school setting with a supportive and cooperative atmosphere for students and their mentors (Oluremi, 2012).

However, there is usually a big challenge in managing a large chunk of documents, especially amongst researchers and experiences of students, hence a better application of innovative and

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effective tools are needed to retrieve, manage, store and share documents, thereby making such relevant information accessible in a university, college or other academic research centers amongst others (Baban and Mokhtar, 2010).

This research work attempts to solve some identified problems of results tracking, such as misplacement of students' records, student's grades, slow and concurrent accessibility to such reports and records, inaccurate record keeping that is prevalent with the existing manual system of the Sa'adatu Rimi College of Education Kano, thereby using such innovative and effective tools in introducing some technological flavours to the way the college is being operated in terms of teaching and learning. The College was established in 1982 with the name College of Education, Kumbotso, but presently named Sa'adatu Rimi College of Education Kano. The institution is placed under the Institute of Higher Education.

The aim of this study is to identify the problems inherent in the existing manual system of transcript management system in Sa'adatu Rimi College of Education Kano, and to provide a remedy to such existing problems, with a more effective electronic system that provides a detailed future plan that gives room for more improvement in the system, such that it handles students records, enabling easy accessibility and information flow within the institution. On the other hand, the Objectives of this research work are:

To design a system that can easily retrieve record and reports of students with increased data security.

To reduce the amount of resources and data redundancy, this in turn will lower the cost of processing of student's transcripts, since information will be stored in a database.

To make available the storage room that will be used for the storage of files.

The perception of this research as reviewed demonstrates the wide applicability of computer in different human endeavours, including most especially in education. This is supported by the definition of Chimezie and Ekwere (1990) that: 'computers are looked upon as obedient servants who are ever ready to free man from tedious procedures and produce results as compared with human computing time'.

As organizations and institutions require accurate and timely information to make present or future decisions, educational institutions in particular also consider and utilize useful electronic tools to meet their peculiar needs especially of handling students' files and records, where the information management is supported by efficient management information system (MIS) (French, 1992; Aluko, 1991).

The Management Information System (MIS) concept as opined by Shah (2014) as a very multifaceted automated system that impacts on institutional/organizational performance, educational institutions inclusive in terms of efficiency and effectiveness, as well as for solving challenging technological problems. Hence, a review of the development and evaluation of an automated Transcript Activities Report Management System (TRMS) is made.

The Transcript Activities Report Management System (TRMS) is a report editor that is user-friendly and conformed to the standard of DICOM Structured Report (DICOM SR), which served as a sort of combination of report instances and documentation template editors that facilitated the creation of reports, thereby simplifying the selection of particular information item and presenting it in an easier graphical visualization (Bortoluzzi, 2003). This effort however, according to Nakamura (2005) is considered as additional, in terms of costs of development as well as of defining the specifications and feasible agreements amongst others.

From above, it became imperative for this research to utilize the concept of implementing an information system features that collect, access and retrieve from the database and support the speed required for an educational institution to work efficiently, hence is expected to be applied on the evaluation and retrieval of the data and activities of students within the College.

METHODOLOGY

This section gives an insightful focus on the analysis of the system. It involves the structured process that collects and analyzes facts as it relates to the system's operation and procedures of the proposed transcript information system thereby providing an effective design and implementation of the computerized information management system (Bill, 2009).

On the method of data collection, the research adopted the two sources of data collection which were: (a) Primary source, that were collected from and through personal interview, involving face to face discussion with the College examination officers and (b) Secondary source, that were obtained from internet, journals, and library sources.

Research Model and Methodology

According to SDLC - Waterfall Model, (2018), there were several software process models and life cycles such as prototyping, waterfall, spiral, rapid application development and incremental model that were structured on the duration and development of different software products.

However, amongst the above software models, the waterfall model which is a Software Development Life Cycle (SDLC) had been observed to best fit the nature of the research since it provides an easy to understand sequential and systematic process of developing the software that had the possibility of the requirements changing (SDLC - Waterfall Model, 2018). The Figure 3.1 below of the waterfall model had demonstrated the processes and stages followed to achieve the proposed software which were as follows:

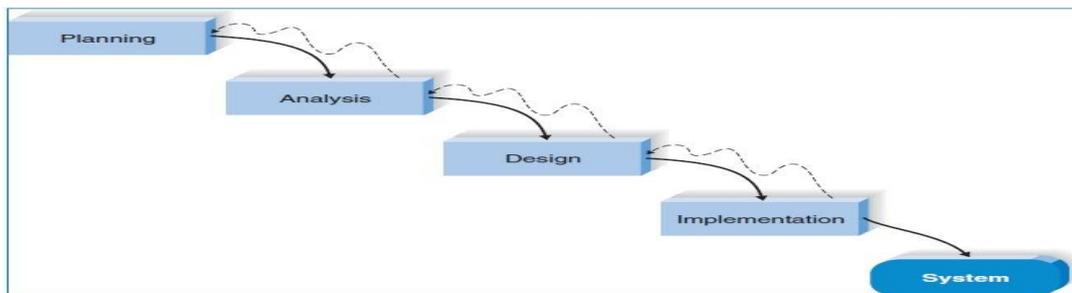


Fig3.1: Host Little, Waterfall development method (2017).

According to Google Sites (2017) and Innovative Architect (2005), the waterfall model software development life cycle has many stages but traditionally the following five stages:

a- Planning:

- Which involves the process of understanding WHY the application should be built & determining how the project will be built?
- The purpose of this first phase is to find out the scope of the problem and determine solution:

b- Analysis:

- Which involve who will use the system, what the system will do.

c- Design:

- Which decides how the system will operate, in terms of the hardware, software?

d- Implementation:

During which the system will be built, and when the project is put into production by moving the data and components from the old system and placing them in the new system via a direct cutover.

e- System:

- *The new system*

The waterfall model is further presented below:

a- Planning:

- *Which involves the process of understanding WHY the application should be built & determining how the project will be built?*

Based on the analysis of the existing transcript management, it showed that the following problems were observed: the storage of record, grade record misplacement, non-cost effective system, as well as poor record keeping, hence the new transcript management system achieved, the following:

- Stored information in a database with reduced data redundancy, record and reports of students are easily retrieved with increased data security and reduced amount of resources, time interference as well as lower cost of service thereby providing more storage capacity.
- The application was developed using Microsoft Visual Basic and Microsoft Access for the front end and the backend respectively.

- *The purpose of this first phase is to find out the scope of the problem and determine solution:*

This application was built to computerize the manual method of storing and retrieving students' transcript in place in Sa'adatu Rimi College of Education Kano.

b- Analysis:

- *Which involve who will use the system, what the system will do.*

To meet the users' expectation, this application considered and adopted the exam officers of the college as the end users since they are usually involved with the features and functionality of storing the students' transcript.

c- Design:

- *Which decides how the system will operate, in terms of the hardware, software?*

As the research is aimed at proposing a standalone software, the functional hardware and software requirements of the system are presented below:

1- Software Requirements: The following specifications are required:

- Operating system- The Certified distribution of Windows, Windows 8 as it is mostly used.
- Front End- With the aid of Visual Basic.Net, a programming language.
- Back End- With the aid of Microsoft Access 2007.

2- Hardware Requirements: The following specifications are required:

(a) The system is IBM compatible, which is part of the early computing technology which enables the system to be utilized by different end users, and a minimum of 128MB Random Access Memory (RAM), and a hard disk space of at least 20GB respectively.

Also, evaluation of the existing process and procedures of information processing were considered at the design stage, thereby enhancing the accuracy and speed of the new system.

A flowchart of the new system design is presented in Fig 3.2:

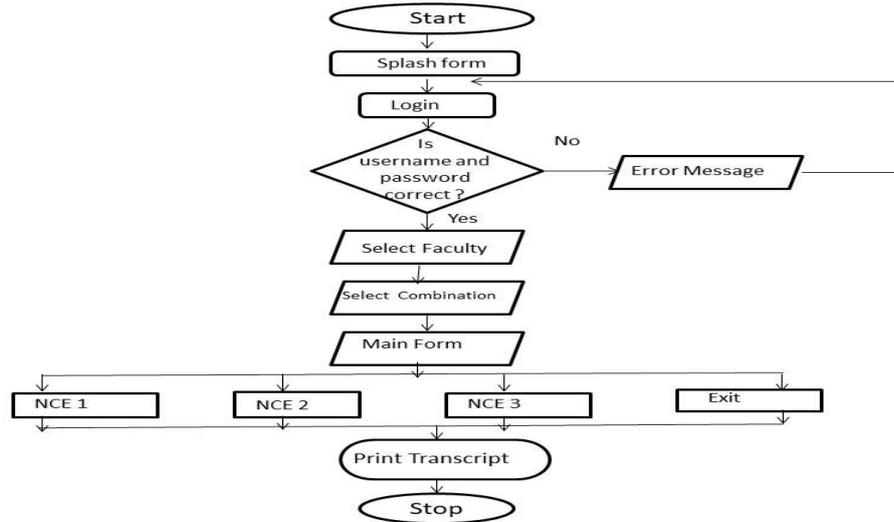


Fig 3.2: The Proposed System Flowchart

For the database design of the new system, a database file was used in the program to store and serve as a repository of the information that facilitates effective working of the system. The databases that were used in the program are presented below in Tables 1 to 4:

Table 1. Login

Field	Field type
Username	Text (20)
Password	Text(8)

Table 2. Faculty

Field	Field type
Faculty name	Text (20)

Table 3. Combination

Field	Field type
Combination name	Text (20)

Table 4. Profile table

Field	Field type
Students name	Text (20)
Reg No	Text (30)
Session	Text (10)
Courses title	Text(50)
Courses Code	Text (10)
Credit	Number (1)
Status	Text (10)
Remark	Text (20)
GPA	Number (10)
CGPA	Number (10)

d- Implementation:

-During which the system will be built, and when the project is put into production by moving the data and components from the old system and placing them in the new system via a direct cutover.

As the phases are executed sequentially, reviews were made to find the possibility of changes to ensure a phase was completed before the next. The components of the new system were narrowed to six components: The **Splash Form**, **Login form**, **Select Faculty form**, **Select combination Form**, **Main form** and **Print Form**. These components are implemented on individual bases, and later integrated at different stages/levels. These components are thus:

1. Splash Form: This is the first view or a welcome interface that would be displayed when the software is opened.

2. **Login form:** This form is the second view and is displayed immediately after the splash form for security and authentication purposes by ensuring that only people with permission are allowed to get access into the software.
3. **Select Faculty form:** This third view or form allowed the examiner to select from the list his/her faculty, either *Science* or *Arts and Social Sciences* or *Languages*.
4. **Select combination Form:** This form allowed the examiner to select his/her combination or Department correspondence to the faculty that was previously selected.
5. **Main form:** This is the form that enabled an examiner to launch into the N.C.E 1, N.C.E 2 or N.C.E 3 modules for data entry or exit.
6. **Print Form:** Is a form used for printing the student transcript that would be sent from either N.C.E 1, 2 or 3.

RESULTS AND DISCUSSION

With the analysis and for the new computerized transcript information management system in the College to be implemented effectively, the results of the functional implementation were discussed based on the following areas of activities:

- Old files conversion into the new system, training and educating of staff on the operation of the new system and the procedure change over, thus:

Careful conversion processes of physical records were done into electronic files based on the stipulated procedures and sufficient time, the knowledge and training of the functions and operation of the new system. There were changes in procedure which had to be considered since ultimately the staff of the user department would extensively use the training for an optimum utilization of the new system in the College, hence the implemented functional features of the new system were:

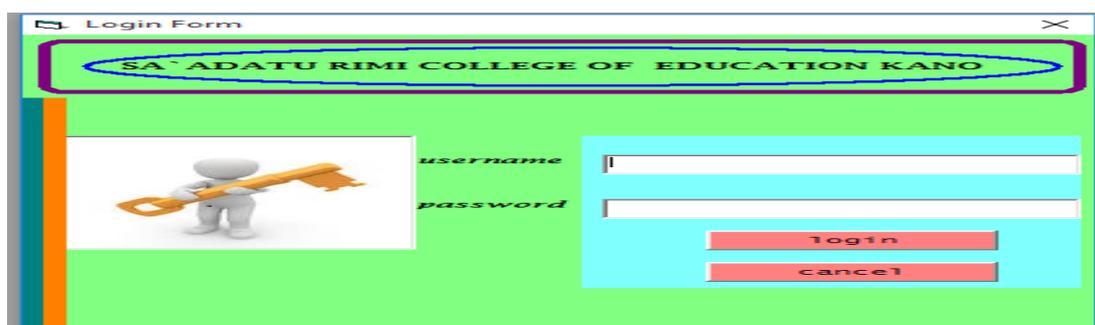
- a- **Splash Form:** This as stated earlier, served as welcome interface and is displayed when the software is opened.

Fig. 4.1: Splash Form



- b- **Login form:** This form is displayed for security purpose immediately after splash form, which ensured only people with permissions were allowed access into the software.

Fig. 4.2: Login Form



c- **Select Faculty form:** This is a form that permits the examiner to select his/her faculty, either *Sciences* or *Arts and Social Sciences* or *Languages*.

Fig. 4.3: Select Faculty Form



d- **Select Combination Form:** This form allows the examiner to select his/her combination or Department correspondence to the faculty that was previously selected.

Fig. 4.4: Select Combination Form



e- **Main form:** Is the form that enables the examiner to launch into the N.C.E 1, N.C.E 2 or N.C.E 3 modules for data entry or exit.

Fig. 4.5: Main Menu Form



N.C.E 1 Module: Is a module used for adding N.C.E 1 student's courses credit units, status and remark.

Fig. 4.5.1: N.C.E 1 Module

STUDENT NAME: Jamilu Abdullahi Suleman
 REG NUMBER: SOS/02/15/0269 SESSION: 2015/2016 N.C.E 1

s/n	course code	course title	Credit	status	Remark
1	ECO 111	Principles of Economic	2	A	Pass
2	ECO 112	Introduction of Mathematics for Economics	2	A	Pass
3	ECO 114	Introductory Statistics	1	A	Pass
4	SOS 111	Foundation of Social Studies	2	B	Pass
5	SOS 113	Man and His Social Environment	2	B	Pass
6	SOS 115	Man and His Economic Activities	1	C	Pass
7	HIS 111	Histography	2	A	Pass
8	HIS 113	West Africa Up to 1800	2	A	Pass
9	GSE 111	Use of English I	2	A	Pass
10	GSE 112	General Mathematics I	2	B	Pass
11	EDU 111	Adult education	1	A	Pass
12	ECO 121	Public Finance	2	A	Pass
13	ECO 124	Introduction of Business Finance	2	A	Pass
14	ECO 125	Introduction to Accounting	2	A	Pass
15	SOS 122	African Community	1	B	Pass
16	SOS 123	Man and His Government	2	A	Pass
17	SOS 124	Nigeria As a Nation	2	A	Pass
18	EDU 123	Citizenship Education	2	A	Pass
19	GSE 121	Use of English II	2	B	Pass
20	GSE 122	General Mathematics II	2	B	Pass

PREVIOUS: 0 CURRENT: 4.63888888888889 CUMMULATIVE: 4.63888888888889

Buttons: <<PREV, NEXT>>, ADD, SAVE, CALCULATE CGPA, PRINT TRANSCRIPT

N.C.E 2 Module: Is a module used for adding N.C.E 2 student courses, credit units, status and remark.

Fig. 4.5.2: N.C.E 2 Module

STUDENT NAME: Jamilu Abdullahi Suleman
 REG NUMBER: SOS/02/15/0269 SESSION: 2017/2018 N.C.E 3

s/n	course code	course title	credit	status	Remark
11		Teaching Practice	3	A	Pass
2		Project	6	A	Pass
3	SOS 321	Population And Family Life Education	2	A	Pass
4	SOS 322	Nigerian External Relations	2	B	Pass
5	SOS 323	Social Institutions	1	C	Pass
6	SOS 324	Globalization	1	C	Pass
7	ECO 321	Applied Economics	2	A	Pass
8	ECO 322	International Economics	2	A	Pass
9	ECO 323	History of Economics Through	2	A	Pass
10	ECO 324	Labour Economics	2	A	Pass
11	ECO 325	Human Resources Development	2	A	Pass

PREVIOUS: 4.56 CURRENT: 4.8 CUMMULATIVE: 4.68

Buttons: <<PREV, NEXT>>, ADD, SAVE, CALCULATE CGPA, PRINT TRANSCRIPT

N.C.E 3 Module: Is a module used for adding N.C.E 3 student courses, credit units, status and remark.

Fig. 4.5.3: N.C.E 3 Module

f- **Print Form:** Is a form used for printing the student transcript that would be sent from either N.C.E 1, 2 or 3. The sample picture below is that of *print form* containing a student's transcript of N.C.E 1:

Fig.4.6: Print Form

s/n	course code	course title	credit	status	remarks
1	ECO 111	Principles of Economic	2	A	Pass
2	ECO 112	Introduction of Mathematics for Economics	2	A	Pass
3	ECO 114	Introductory Statistics	1	A	Pass
4	SOS 111	Foundation of Social Studies	2	B	Pass
5	SOS 113	Man and His Social Environment	2	B	Pass
6	SOS 115	Man and His Economic Activies	1	C	Pass
7	HIS 111	Histography	2	A	Pass
8	HIS 113	West Africa Up to 1800	2	A	Pass
9	GSE 111	Use of English I	2	A	Pass
10	GSE 112	General Mathematics I	2	B	Pass
11	EDU 111	Adult education	1	A	Pass
12	ECO 121	Public Finance	2	A	Pass
13	ECO 124	Introduction of Business Finance	2	A	Pass
14	ECO 125	Introduction to Accounting	2	A	Pass
15	SOS 122	African Community	1	B	Pass
16	SOS 123	Man and His Government	2	A	Pass
17	SOS 124	Nigeria As a Nation	2	A	Pass
18	EDU 123	Citizenship Education	2	A	Pass
19	GSE 121	Use of English II	2	B	Pass
20	GSE 122	General Mathematics II	2	B	Pass

CGPA: 4.63888888888889

System Testing and Evaluation

As the system was tested to make it operational and adoptable, some changes were effected on the existing system in the College which provided some great improvements by eliminating the inefficiencies with the old system with more room for improvements.

For the system testing and evaluation, Blecken, Bruggermann and Marx (2010) cited Nielsen (2008) recommendations for software usability test of a sample of five persons. This involved identifying the problems that may affect the usability of the system; performing the task using the application, thereafter, five participants were considered and expected to give feedback by responding to the questionnaire that were issued.

To perform the tasks on the new system the following steps were considered:

- Plug the socket and all the connectors carefully fitted to the system.
- Boot/On your computer
- Install and run the program

The results of the tasks were as follows:

1. **Do you require any special training before using this system?**

The data collected indicated that since it is a standalone software, only a participant out of the five had problem in installing the software on the windows 8, hence sort a little guidance and it was resolved. Thus, no special training is needed to use the system/software.

2. **Do the system/software meet the user requirements? Yes or No**

From the five questionnaires administered to the five participants, four opined that it met the user requirement, while the other participant opined not completely due to his experience with the installation problem on the windows 8.

3. **Is the system accurate to the required point/place of interest?**

All the five participants believed that the system had met the user requirement of accurately calculating the CGPA, precisely and quickly.

4. **Do you consider the system simple and easy to interact with?**

Two out of five participants rated the system to be excellent, with two participants rating it very good, and a participant a fair may be due to his experience with the installation problem on the windows 8.

5. **System's Functionality Ratings?**

All the participants were impressed with the new software as it had some similar functionality with other standard systems. Suggestions were made by them on more improvement in the future to make it more user friendly.

CONCLUSION

This research on the new transcript management system had observed a more convenient, and efficient production of accurate information and its management in the college as opposed to the old system, with more room for improvement.

The new software had also provided the needed functionalities for information management-grading, records keeping - for an easy and data security computer system-, and as a collaborative research, it involved the first author who provided the direction, and several inputs to the overall research to include the evaluation section, the second author developed the software using the desired methodology and thereafter sort assistance of some technical expertise from the third and fourth author.

The software if fully adopted and utilized would provide an efficient valuable tool that can meet some information management requirements of the entire college.

RECOMMENDATION

The following were made as recommendations for this transcript management system as a computer based information management system to achieve the effective needed usefulness, that:

- All the faculties, departments and combinations should be computerized and adopt the software to ensure easy flow of information in the college.
- Advocacy and educating stakeholders and the service providers should be done on the use of the transcript's information for academic and related planning.
- Policy guidelines should be formulated, developed and organized on the use of information, data, and its collection in the college to facilitate easy access and utilization.

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