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Computer-Based Decision Support System: A Study of Akanu Ibiam Federal Polytechnic

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Abstract

This work is aimed at developing a decision support system to improve the decision-making capacity of administrators of our case study (Akanu Ibiam Federal Polytechnic, Unwana) and other parties. The system will help them to develop their administrative skill in decision making and resource management programs. The development framework is divided into three levels that employed Web-based application at the data collection level for collection of student statistics which is the primary data. Database application was used at the Processing level to provide administrative utility for data flow control and storage while the output level depends on a spreadsheet application for summary and advisory purpose. The research though not yet completely explored, its benefits will aid in the general management of the school system.

Index terms— Database, Statistics, Students, Web, Spreadsheet, Application

1 I.

Introduction ccording to Wikipedia, "A decision support system (DSS) is a computer-based information system that supports business or organizational decision-making activities. DSSs serve the management, operations, and planning levels of an organization and help to make decisions, which may be rapidly changing and not easily specified in advance. DSSs include knowledge-based systems. A properly designed DSS is an interactive software-based system intended to help decision makers compile useful information from a combination of raw data, documents, personal knowledge, or business models to identify and solve problems and make decisions". [1] Computerized decision support systems became practical with the development of minicomputers, timeshare operating systems and distributed computing [2].

Akanu Ibiam Federal Polytechnic, is a tertiary institution in Nigeria controlled by National Board for Technical Education for awarding of National Diplomas and Higher National Diplomas on various courses offered by the institution. The research framework presented in this paper is aimed at serving as a decision support system for the institution's management decision, the application is not limited to the management team alone, it is also designed to transcend to other decision areas like, the student affairs unit, Heads of Department, Deans of Schools and others inclusive. The decision of the institution's management team is completely controlled by the information gathered from different variables which include student statistics, monetary inventory and many more. This is the first research on this dimension for this case study and still being explored, so our concentration is currently on developing a decision support framework from student statistics gathered through a web based portal system, with a combination of some query and database software. The system is a combination of different level of applications that are interconnected for proper functionality. Fig 1 **??**0 is a model approach followed for the development of our decision support system. DATA COLLECTION (Web-based Level): The Internet era has taken information-sharing to new heights, allowing billions of users to share information on the World Wide Web [3]. The World-wide Web and global Internet provided a technology platform for further extending the capabilities and deployment of computerized decision support. This system uses tools like Internet Explorer, Mozilla Firefox, and Netscape accessible to analyst for data management. The clients and servers must certify all

the condition of network connectivity like the TCP/IP protocols [3] Considering the potentials of the World Wide Web, this category was developed to use the institution's web portal as a cache for gathering students' statistics. The web portal is designed for management of student fee payments and registration, but for the purpose of this research work, we used this portal to form a common synergy between the web application and a database program for information collection. On the completion of the forms presented by the web portal application during student's registration, the database program queries these data according to the required fields. PROCESSING AND STORAGE (Management Access Level): At this level, management tools are employed for extraction of information according the required properties. This involves the use of spreadsheet and database programs for storage purposes. The method of data collection, informed our choice of web based system were processing and data analysis can be grouped in field of different properties. According to Power in www.dssresources.com, a datadriven DSS emphasizes access to and manipulation of a time-series of internal company data and sometimes external and real-time data [3]. Such data collected from our web portal is accessed using some simple file systems controlled by query and retrieval tools to provide the most elementary level of functionality. The data storage system is designed to allow the manipulation of data by computerized conditions tailored to a specific task and setting. The system outputs a summary when certain conditions are met, exceeded or approached. Fig 3.0 shows a conditional query of our database to output some required properties in a spreadsheet format using Microsoft Excel application.

OUTPUT AND SUMMARY (DECISION LEVEL): This level provides a summary of the outcomes from data collection and processing. In this category, every

required condition provides details of its output fields. For instance, fig 3.0 is a detailed summary of the students' statistics which is an efficient support system for decision making purposes extracted from the processing and storage level. Spreadsheet application is employed at this stage to enable a detailed extraction of the needed information. Keys were used to help in the understanding of some coded formats because the summary is completely meant to be accessed by the decision makers who may not be computer analysts but understand basic statistical distribution of data.

III.

3 Applications

This system finds its application in almost all the units of the institution. For instance, the academic unit can use the system for admission, accreditation and population control purposes. The administrative unit can employ this system for staff, equipment and distribution purposes. The management unit can use this system to develop a more informed relationship with the control organ being the NBTE. Many researchers have developed similar system for several applications; some have presented result for land use and agricultural purposes, Canadian National Railway System, etc [1] IV.

4 Benefits

The research is aimed at equipping decision markers with an accurate, in time and up-to-date information. It will provide many benefits which include and not limited to ? Improving efficiency of the system ? Enhancing the decision making process ? Developing a more efficient organizational control ? Proving avenue to faster problem solving in the institution ? Facilitate communication ? Promote learning, teaching and training ? Reveal new approach for improvement of the Decision Support System ? Automate managerial process.

V.

5 Conclusion

The result as outlined in fig 4.0 is currently employed for the next session admission process, although challenges that will lead to improvement of the system are being anticipated. Every arrangement has been made to cushion foreseen developments as can be projected at this stage. Hence a higher version of the DSS program for more robust data control is currently being analyzed.

1

Figure 1: Fig 1 .

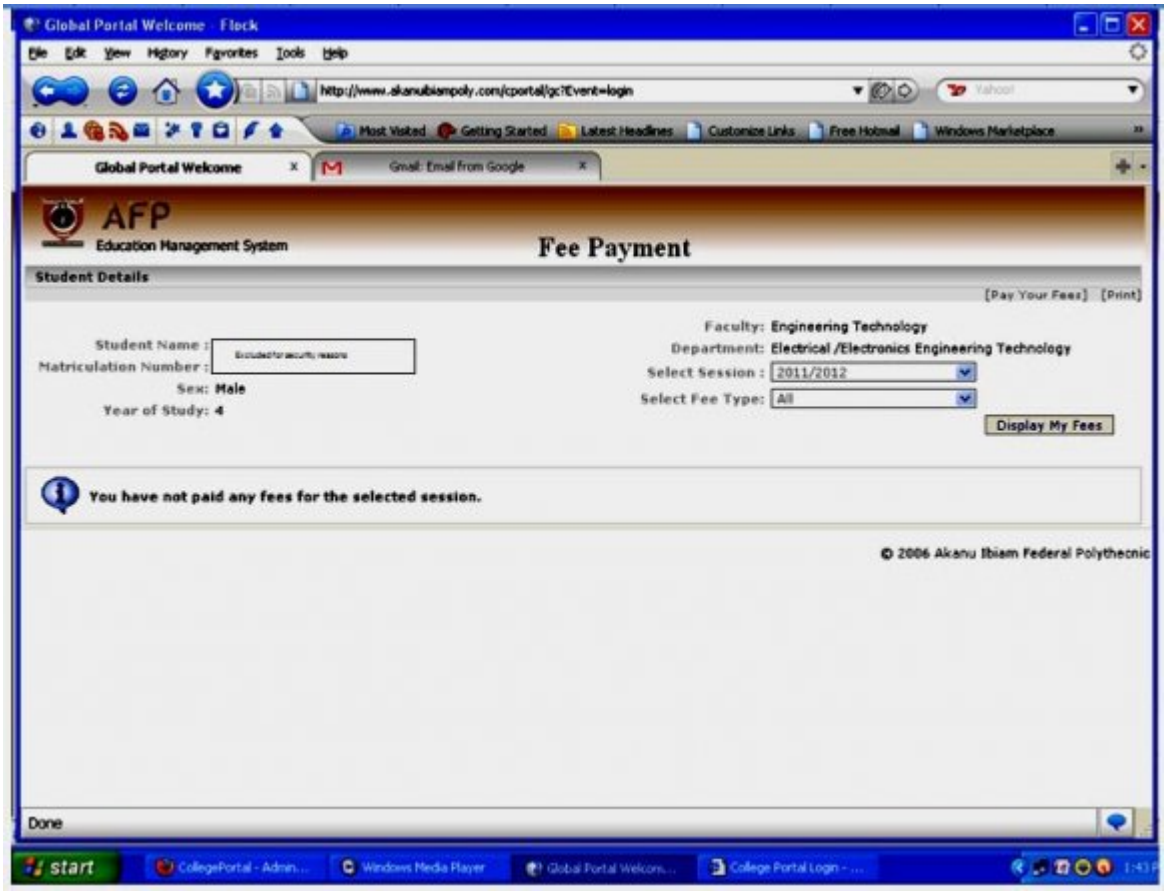
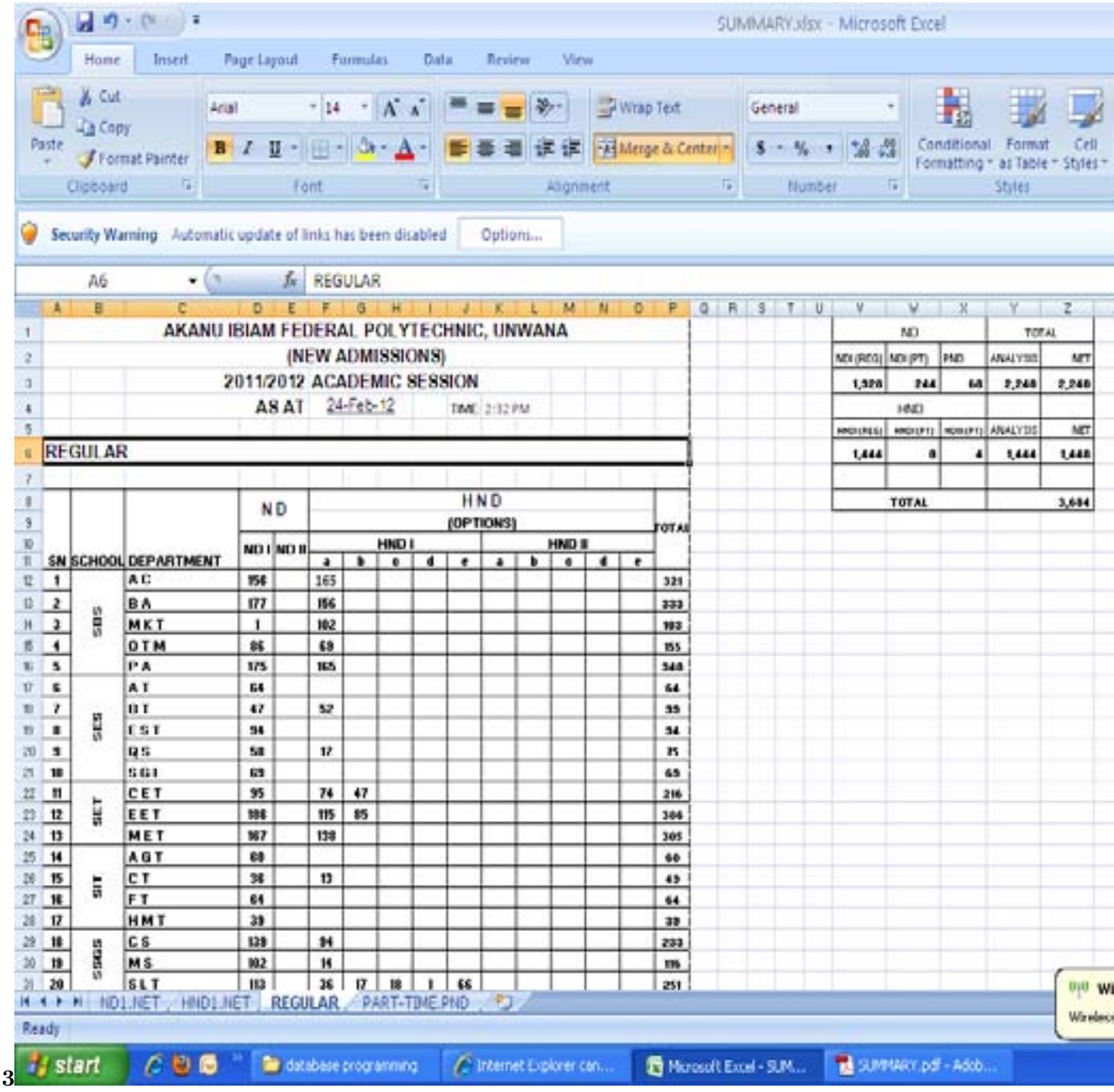


Figure 2:

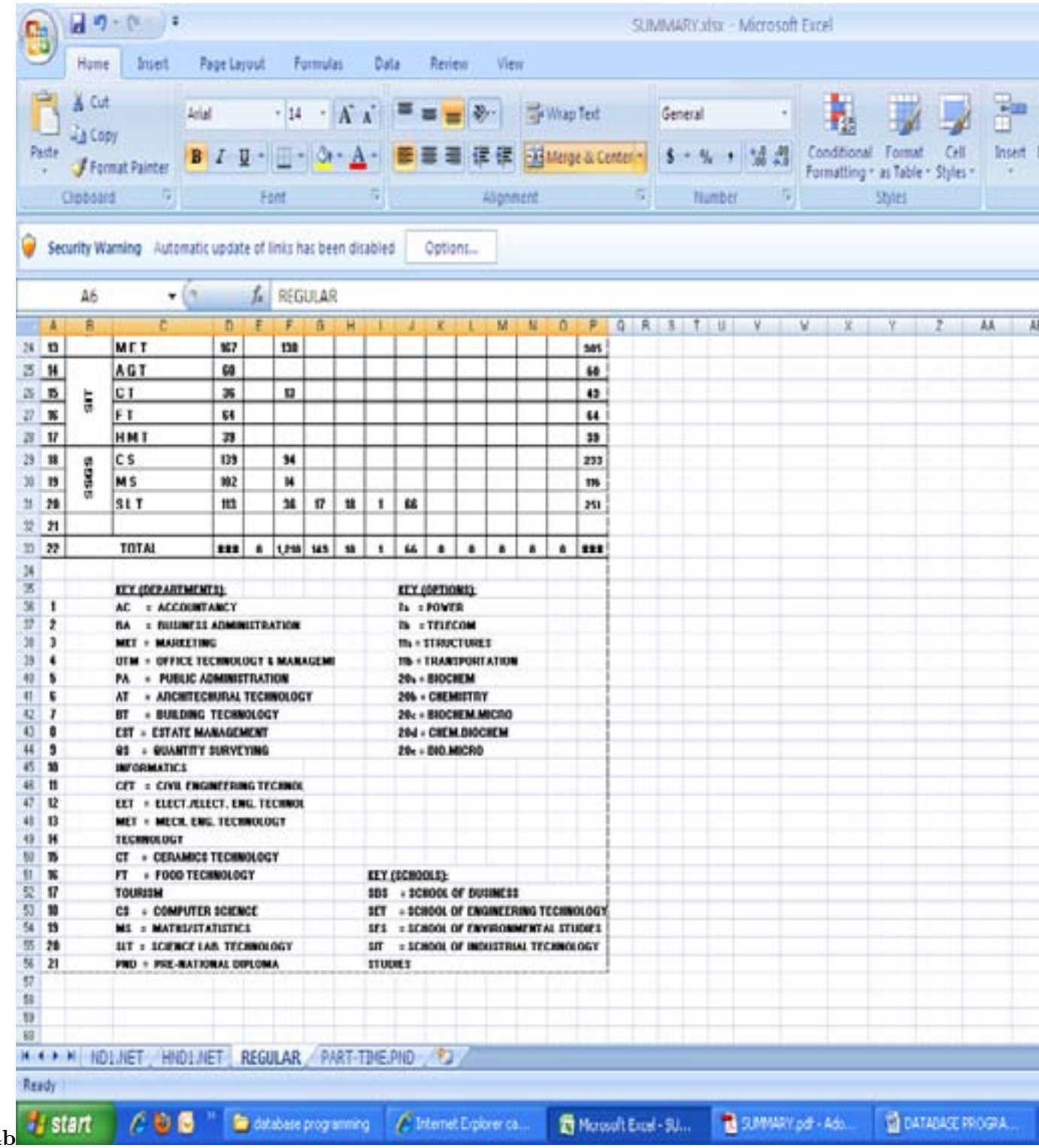
2

Figure 3: Fig 2 :



3

Figure 4: Fig 3 :



4b

Figure 5: Fig 4b :

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[Decision support system -Wikipedia] *Decision support system -Wikipedia*, http://en.wikipedia.org/wiki/Decision_support_system

[Power] D J Power . http://dssresources.com/history/dsshistory.html *A Brief History of Decision Support Systems*,