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Trends and Analysis of Graduate Programs

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Abstract: Due to the influx of students in higher education institutions, this study was designed to generate, process, and analyze students' information using online data retrieval. The system was crafted using data mining techniques. The PHP scripting language for web development and the V-Model Design were employed during the course of the study. To analyze the data, simple recursive algorithm was used. The procedure solved the base cases that directly recurs with a simpler sub problem and does some extra work to provide the solution to the simpler sub problems. In this study, it combined the records from one table to another to generate results and determine all the registered enrollees in the system. Respondents included new students, old students, and the graduates of the academic institution under survey. The objective is to replace the actual rigorous paper works during every transaction engaged by the students. The system used to generate information on enrolment, vertical alignments, and program trends. The study found out that the system was deemed effective in terms of system, information, and service quality.

Key words: Trend Analysis, Graduate School Information System

Introduction

The role of data mining from databases has proliferated these days with the advent of technology. At the moment, there are institutions including medical organizations that collect data from databanks. Because of the availability of massive data, there is a need to automate the mechanisms of extracting this needed information. Such body of knowledge can then be put to use to improve productivity (Perez, 2016).

Surigao del Sur State University as an academic institution is the only state university in the province of Surigao del Sur, Philippines. It has six satellite campuses spread across the province. It offers graduate school programs to the stakeholders of the province. Because of being the lone state university in Surigao del Sur, there is an escalating subscription in its various graduate school programs. Due to the ever-increasing number in the graduate studies, the Institution now has difficulty to track its graduates; hence, this study aims to trace the status of its graduate and the graduate trends.

The study is useful to the Graduate School of SDSSU because the system can be a mechanism to trace the programs' graduate movements, including their employability, program trends, and other relevant information relating to the area of the department understudy. This could also serve as a model that other departments can replicate for data gathering efficiency and avant-garde data analysis.

Problem Statement

The primary objective of this study is to design and develop an online information system that would serve as tool to trace the graduates of the Graduate School of Surigao del Sur State University. Specifically, it sought to answer how the system interprets the data, identify the performance of the developed information system in terms of generating: the graduate trends, employment trends, program trends, enrolment trends, and the use of data mining, as well as identify the level of effectiveness of the online information system in terms of system, information, and service quality.

Methods of Research

The study used the PHP scripting language for web development. It is free and open source. The SQL is a Relational Database Management System (RDBMS) that used Structured Query Language (SQL). It could generate the following results: a) enrolment trend; b) graduation trend and; e) socio-economic profile. It also analyzed the annual data of the enrollees per program- those who are vertical and non-vertical in their field of expertise. The system can store and retrieve the information within four (5) to five (10) years.

It could generate information of the graduate school with regards to their status and promotion. The graduate student can access the account and fill up the survey form and update their status by signing in to the

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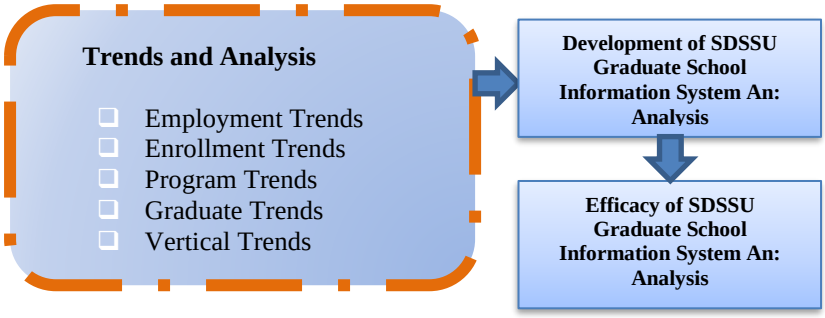
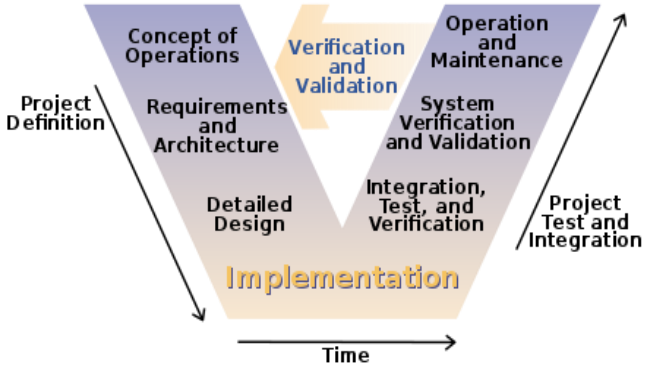
online system of SDSSU using their first name, last name, and their date of birth. For the new enrollees, they can access the system and view the form for the new student for them to fill out for their enrolment reservation. They can also view the programs, the offered subjects and other promotions of SDSSU graduate studies, awards, certificates, the vision, mission and goals, achievement of the graduate studies, and all types of trends. However, as part of the limitation and security of every student, not everyone can view the personal data of the student. Reservations can be printed if students are willing to enroll, and this will be submitted to the registrar. The registrar on the other hand will also provide a school ID as a confirmation of their enrollment to a specific program under the Graduate School. Each user to include student, graduate, staff, and the administration of the graduate school has its own user ID and password that they can utilize for their personal data and if there is a need to update their information.



The system employs the V-Model Design. The V-Model of testing was developed wherein the Development life cycle has a corresponding testing phase. The left side of the model is Software Development Life Cycle –SDLC. The right side of the model is Software Test Life Cycle – STLC. The very façade of the model looks like a V-shape; hence its name. The V-Model is an SDLC model where execution of processes happens in a sequential manner in a V-shape. It is also known as Verification and Validation model.

The study also employed Data Mining and Simple Recursive Algorithm. Data mining is an essential process where intelligent methods are applied to extract data patterns. It is an interdisciplinary subfield of computer science. The overall goal of the data mining process is to extract data patterns. It is an interdisciplinary subfield of computer science. The overall goal of data mining process is to extract information from a data set and transform it into a comprehensive structure for further use. Further, it can also retrieve records that have been stored for five to ten years.

The algorithm utilized for this purpose was simple recursive. The procedure solved the base cases that directly recurs with a simpler sub problem and does some extra work to provide the solution to the simpler sub problems. In this study, it combined the records from one table to another to generate results and determine all the registered enrollees in the system.



The development system utilized in this study is a combination of top-down and bottom-up approaches. According to Sunner (2015) in the study of Cosidon (2016), a common discovery, is that while each client has a unique and challenging systems engineering problem, teams often do not optimize on the best approach for solving the problem.

Results and Discussions

Results of the study show that on the efficiency in the interpretation of the system, an overall total mean of 3.25 was gained. The three groups of respondents considered the developed information system programs of the graduate school salient with respect on the tracing of the current status and employment tracking of the graduates. They found the system adequate as to its capacity to generate and analyze relevant information on the graduate, enrolment, vertical, program, and employment trends. This is supported by the study of IdaverSherifi (2015). He stated that at present, the information systems are essential in any organization.

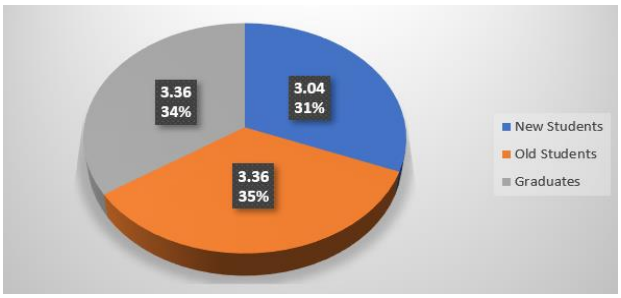


Figure 5: Purpose / System interpreting the data

The figure on the Performance of the Developed Information System gained a 3.26 mean with an excellent adjectival description. It implies that the system can relevantly generate information from the students relative to their enrolment trends, program trends, graduate trends as far as their vertical and non-vertical alignments are concerned. This is parallel to the articulation of Madiha (2013) who noted that when technology is integrated to education, productivity will be evident because of its potent impact to academic institutions.

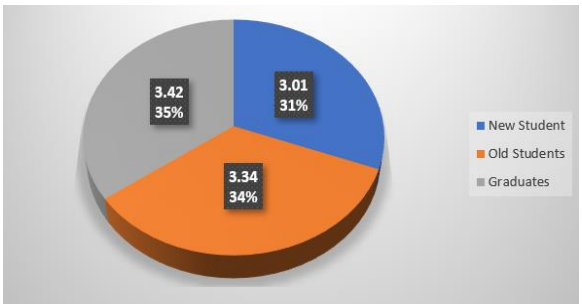


Figure 6: Performance of the Developed Information System

The System quality outcomes obtained an overall mean of 3.15 that corresponds to an adjectival rating of better. The slight decline in the result outlines that the online information system based on the system quality can still improve in terms of generating the employment, graduate and program trends of the graduate studies. However, this can be a source to spawn the students' personal information for tracer study purposes.

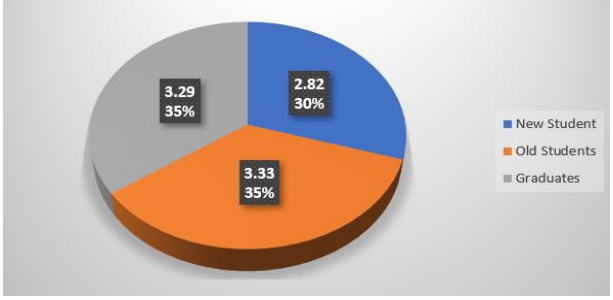


Figure 7: System Quality

In terms of the information quality of the developed system, the results show an overall-mean of 3.14 with a descriptive value of better. This further showcases that there is an insignificant decrease in the mean result; however, students find the information system useful in the gathering of data from the graduate studies programs since it makes the data gathering of the students' personal information to be efficient and well-organized.

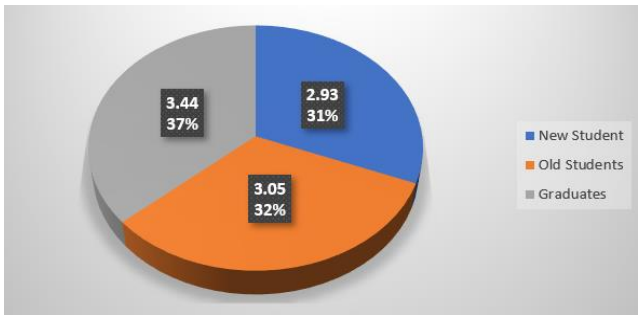


Figure 8: Information Quality

For the service quality, the resulting mean is 3.09 obtaining an adjectival rating of better. The result implies that as to service quality, respondents qualify it as effective, comprehensible, useful, and manageable. This is also the same with the system adopted by the Department of Education pertaining their Learners' Information System (LIS). The system is utilized to manage the learners' information efficiently. Soliven (2012) posited that the quality service can be supported by the online information system.

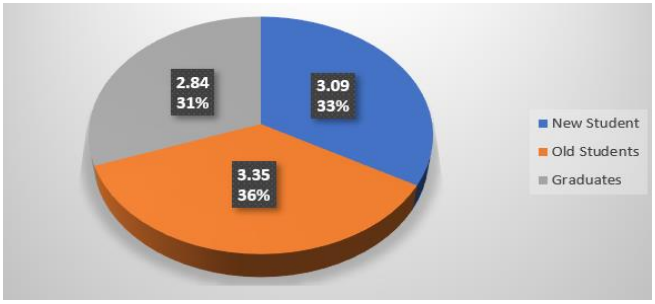


Figure 9: Service Quality

Conclusions

The idea of this research is anchored on data mining which is relevant relative to the information system of the graduate school program in order to gain various data trends pertaining to its programs. The study found out that the system was deemed effective in terms of system, information, and service quality. Such system can also be used for tracer study as it can

gather information of graduates such as work status and promotion. Further, the continuous update of the students' status is considered as one of the best features of this system.

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