

## Research Article

### STUDENT INFORMATION AND ACCOUNTING SYSTEM OF CAGAYAN STATE UNIVERSITY – LASAM CAMPUS, PHILIPPINES

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#### ABSTRACT

The study aimed to develop a fully customized Student Information and Accounting System (SIAS) of Cagayan State University – Lasam Campus to facilitate the enrollment and accounting process and to cater the needs of all the clients and the staff in the delivery of frontline services. It is also compliance to the mandate of the CSC in Section 5 of RA 9485 (Anti-Red Tape Act of 2007). This study followed the framework of Design Science Research for Information Systems, thus, the researcher identified the problems encountered in the enrollment and accounting process, defined the objective of the study, designed and developed the system, deployed and evaluated, and presented the result of the study. The SIAS operates in multiple computer units over the network having a centralized database for data storage and retrieval. It has different integrated features that support the needs of the frontline service providers and the clients. The overall functionality of the SIAS increased the efficiency of the frontline service providers since most of the processes are computerized and automated. The result of the survey along with quality of services, accuracy of records and reports, and timeliness reveals that SIAS is significant and effective instrument in the delivery of frontline services.

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## INTRODUCTION

Information Systems (IS) are consist of data, hardware, software, people, and procedures, all with strengths and weaknesses. In a computer-based IS, computers collect, store, and process data into information, according to instructions people provide via computer programs. Moreover, all IS operate in the same basic fashion whether they include a computer or not. However, the computer provides a convenient means to execute the four main operations of an IS such as entering data into the IS (input), changing and manipulating the data in the IS (data processing), getting information out of the IS (output), and storing data and information (storage) (Oz, 2000). The Civil Service Commission (CSC) mandated all government agencies including State Universities and Colleges (SUC's) that provide frontline services to improve its delivery of services to its clients. Furthermore, Reengineering of Systems and Procedures as specified in Section 5 of RA 9485 also known as the "Anti-Red Tape Act of 2007" states that all offices and agencies which provide frontline services are hereby mandated to regularly undertake time and motion studies, undergo evaluation and improvement of their

transaction systems and procedures and re-engineer the same if deemed necessary to reduce bureaucratic red tape and processing time. In compliance to the mandate of the CSC, the researcher initiated to develop a fully customized SIAS to improve and accelerate the delivery of frontline services of Cagayan State University – Lasam Campus (CSU-Lasam). The system is intended to facilitate the enrollment and accounting process and to cater the needs of all the clients and the staff in the delivery of frontline services. Student Information and Accounting System (SIAS) is a full-featured, complete and integrated system for government and private schools, colleges and universities in any size which integrates registrar, cashiering and accounting processes. Registrar's transactions include student registration, grades entry, certification of grades and enrollment, evaluation of grades and issuance of official transcript of records. Cashiering and accounting transactions include collection of payment and issuance of receipt, assessment and updating of student ledger (Espiritu, 2013).

### Conceptual Framework

The study is guided with the Input-Process-Output (IPO) model to design and develop a fully functional SIAS that enables the users to enter data, process data, produce information, and store them in a database with user-friendly interface between the users and the system.

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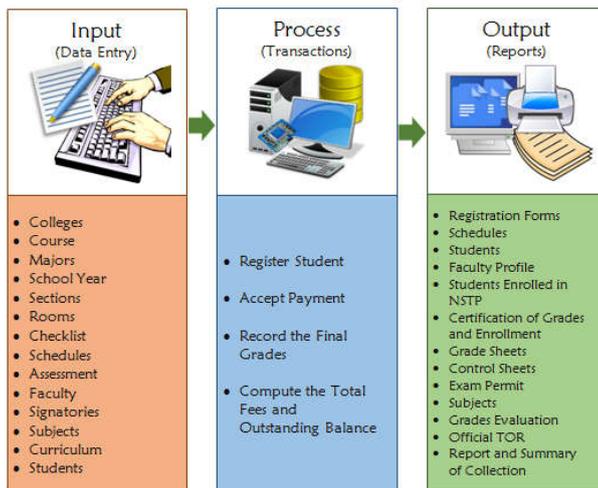


Figure 1. The Conceptual Model

### Statement of the Objective

The general objective of the study is to develop a fully customized SIAS based on the status of the manual enrollment and accounting process of the campus and specifically to:

### Design the features of the system suited to the nature of:

- Registrar Services
- Cashiering Services
- Accounting Services

### Evaluate its effectiveness along with:

- quality of customer service
- timeliness of providing the services
- availability and accuracy of reports or documents.

## MATERIALS AND METHODS

The researcher used the Design Science Research (DSR) for Information Systems (IS) following the six steps as follows: first, the researcher identified the problems and needs in performing the enrollment and accounting process through series of interview; second, the researcher defined the objective of the study based on the problems and needs identified and that is to develop a fully customized Student Information and Accounting System (SIAS) that will support the enrollment and accounting process and will satisfy the clients in the delivery of services; third, the researcher analysed the requirements based on the identified problems and the objective, then created the design of the desired interface and functionality of the system which involves modelling and flowcharting. Based on the created design, the researcher developed each feature of the system which involves programming or coding and preliminary testing, and integrated all the features for testing and for deployment; fourth, the researcher deployed the finished initial version of the system for production or in full transaction loads. It involves end-user training and support, management of change, and data conversions. Further, it involves experiment or testing and series of refinements to minimize or eliminate unfavourable impacts; fifth, the researcher measured the functionality and effectiveness of the system by comparing the objective and its real and complete functionality.

The researcher likewise observed the actual flow of transactions as the users use the system. To further evaluate, the researcher adopted the result of the Students Satisfaction Survey (SSS) for frontline services; and lastly, the researcher makes the availability of this paper to diffuse or communicate the problem and its importance, the artifact which is the SIAS, its utility, novelty, design and its success to the researcher and other audience such as practicing professionals. Moreover, the researcher deposited the artifact in the National Library of the Philippines to give him legal protection and rights to the artifact as his original work.

### Operational Framework

To use the system, the users need to login by entering the registered login credentials such as username and password. Users are categorized based on their function. The account type or access level of the users such as Accountant, Administrator, Bookkeeper, Cashier, Clerk, Dean, Faculty, Registrar and Student is based on their specific function. If the login credentials are correct, the main window of the system will appear and only the allowed features associated with the account type can be accessed, otherwise, the system will inform the user about the incorrect credentials. The system will terminate after entering three consecutive wrong credentials. The overall functionality of the system enables the users to add, edit, delete, search and print records depending on the account type of the current user. The system runs in multiple computer units over the network and accessing a single database for data storage and retrieval. The system will not terminate unless the user will close it.

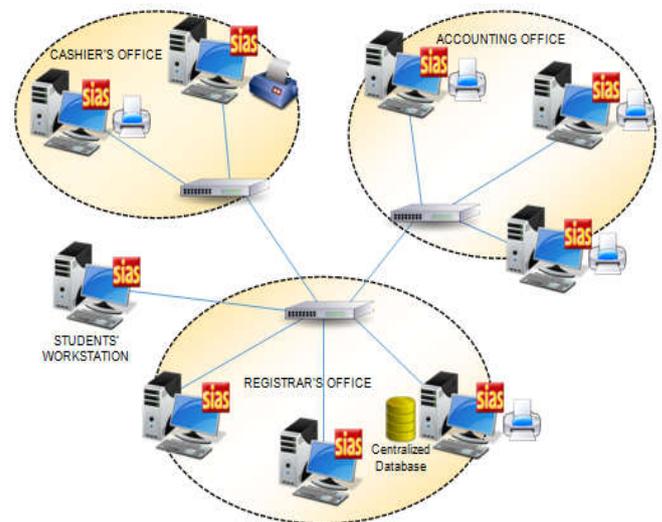


Figure 2. Overall Structure of the System

### Overall Structure of the System

Sharing the same data from a centralized database and printing of reports involve the use of computers, printers, network cables and routers, switches or hubs (depending on the network design and location of the intended users within the campus). The provision and integration of the different hardware and software components will complete the functionality of the system, thus, the following requirements must be provided and satisfied during the deployment:

- Computers where the system will be installed.
- Impact printer (dot-matrix) for the printing of receipt (intended for cashier).
- Non-impact printers (any kind of printer) for the printing of reports.
- Routers, switches or hubs, UTP Cables and RJ 45 for the network connection.

### Description of the Hardware Components

- **Computers.** These are used to manipulate the system. A high specification computer unit should be utilized where the centralized database will be installed. It will serve as the server of the system. On the other hand, computers with lower specifications can be utilized for clients.
- **Impact Printer.** These are printers that use ribbon to print characters on a paper. Dot-matrix is the most appropriate printer of this kind in printing receipt since the receipt is in triplicate (three copies).
- **Non-impact printers.** These are printers that use ink instead of ribbon to print characters on the paper. They are used to print reports except receipt since they have better output. Any printer of this kind can be used.
- **UTP Cables, RJ 45 and Routers, Switches or Hubs.** These are network peripherals that will serve as the bridge and enable the users in accessing the centralized database. Data or information will pass through the cables and switches.

### Software Migration Method

Phased Rollout software migration was the method used in deploying the system for operation and production. The initial version that was deployed for production is limited only to the features needed by the registrar in facilitating the enrollment process. While using and testing the features of the initial version, the researcher also integrates features needed by other offices for another set of tests. Same method or procedure was used until all features of the system were integrated and became fully functional.

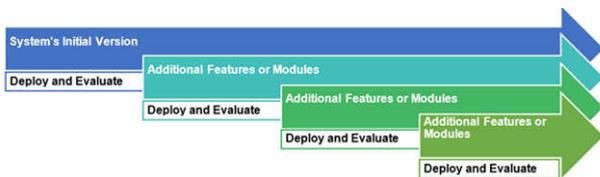


Figure 3. Phased Rollout Migration Method

### Respondents

The three (3) frontline service providers such as the registrar, cashier, and accountant are the respondents in identifying the problems and the needs since they are aware of the scenarios and transactions in their respective offices. Total enumeration of the nine hundred nine (909) college students was used in the evaluation of the effectiveness of the system in the delivery of frontline services.

They are the most reliable source of data since they are the direct recipients of the different services.

### Measures

The researcher used interview guides in identifying the problems and the needs of the three frontline service providers. Results from the interview were used to identify the features and functionality of the SIAS. Direct observation was also used before the development of the system to further investigate the needs and the problems encountered by the students as the major beneficiaries. This instrument was also used after the system has been deployed for operation. Likewise, questionnaire was also used to gather the students' rating on the effectiveness of the system. The questionnaire was adopted from the SSS devised by the staff of the University Planning and Development Office (UPDO).

### Procedure

In conducting the interview, the researcher went to the registrar, cashier, and accountant individually to determine the needs and problems in their respective offices. The researcher repeatedly did the same way as data is needed until the completion of the system's features and functionality. During the enrollment process, the researcher observed how the different frontline service providers deliver the different services to the students. Likewise, the researcher observed the scenario of the students in getting the forms and reports they need. Since the questionnaire was just adopted from the SSS devised by the UPDO, the Campus Quality Assurance Officer (CQAO) was the responsible person in floating the questionnaire. The CQAO went to the classrooms and the respondents were given enough time to answer the questionnaire. The questionnaire used the 5-point Likert scale indicating: 5-Best; 4-Better; 3-Good; 2-Fair; 1-Poor.

### Data Analysis

To provide evidence on the effectiveness of the system, data collected from the 909 college students as respondents were statistically treated.

Qualitative values assigned are as follows:

Numerical Scale	Descriptive Equivalent
4.20 - 5.00	Best
3.40 - 4.19	Better
2.60 - 3.30	Good
1.80 - 2.59	Fair
1.00 - 1.79	Poor

## RESULTS AND DISCUSSION

Using all the complete system's integrated features to support the transactions of the frontline services, the three major frontline service providers obtained high ratings in terms of quality, timeliness and accuracy in service delivery based on the adopted result of the Students Satisfaction Survey for frontline services for the school year 2015-2016 with a total of 909 respondents (Table 1-3). The initial version or modules of the SIAS was deployed and was first used for operation in October 2010.

**Table 1. Result of the Students Satisfaction Survey for accounting services**

ACCOUNTING SERVICES	Mean	Descriptive Equivalent
Quality of customer service from the Accountant and his/her staff	4.03	Better
Timeliness of response to service requests from the Accounting staff	3.99	Better
Availability of test permits and accuracy of statement of accounts and other pertinent documents	4.04	Better
Grand Mean	4.02	Better

**Table 2. Result of the Students Satisfaction Survey for registrar services**

REGISTRAR SERVICES	Mean	Descriptive Equivalent
Quality of customer service from the Registrar and his/her staff	4.28	Best
Timeliness of response to service requests from the Registrar staff	4.31	Best
Availability and accuracy of student records and other related documents	4.30	Best
Grand Mean	4.30	Best

**Table 3. Result of the Students Satisfaction Survey for cashiering services**

CASHIERING SERVICES	Mean	Descriptive Equivalent
Quality of customer service from the cashier and his/her staff	4.07	Better
Timeliness of response to service requests from the Cashier's Office staff	4.06	Better
Availability and accuracy of official receipts and other related documents	4.08	Better
Grand Mean	4.07	Better

Series of evaluations, revisions and updates were made to achieve its complete functionality and compatibility in the existing transactions of the university considering the welfare and convenience of all its clients. The desired functionality has been completed; hence, the system has the capability to facilitate all the transactions needed by the users as well as the clients. Students who want to view their grades will no longer proceed inside the registrar's office because there is a SIAS installed in a computer unit outside the office that provides simple and easy-to-use feature intended for the students in viewing their grades. This feature made the registrar more productive. It is also more convenient in the part of the students since there is no more interaction. Based on actual observations, the time consumed in providing frontline services during normal circumstances was reduced.

Currently, registration of freshmen students can be done only in 4-6 minutes, 2-3 minutes for old and regular students and 2-4 minutes for irregular students; issuance of certification of grades and enrollment can be done in 1 to 2 minutes; preparation and issuance of official transcript of records can be done in 10 to 20 minutes and printing of evaluation of grades can be done in 1 to 2 minutes for regular students. Furthermore, collection of payment and issuance of receipt can be done in 1 minute; issuance of examination permit can be done in 1 to 3 minutes; assessment of students' fees can be done in less than 1 minute but this might no longer be included in the enrollment process since the system will automatically compute the outstanding balance of the students and updating of student ledger might also be eliminated as a process during enrollment. In the result of the Students Satisfaction Survey, Table 1 presents the assessed Accounting Services in terms of quality with weighted mean of 4.03, timeliness with weighted mean of 3.99, and accuracy with weighted mean of 4.04. All the three items rated fall on Better rating. Likewise, Table 2 presents the Registrar Services in terms of quality with weighted mean of 4.28, timeliness with weighted mean of 4.31, and accuracy with weighted mean of 4.30. All the three items rated fall on Best rating.

Furthermore, Table 3 presents the Cashiering Services in terms of quality with weighted mean of 4.07, timeliness with weighted mean of 4.06, and accuracy with weighted mean of 4.08. All the three items rated fall on Better rating. Based on the result of the survey, it reveals that the SIAS is effective in the delivery of services of the three frontline service providers.

### Conclusion

The different features of the SIAS impressed Cagayan State University – Piat and Lal-lo Campus, Philippines which made them adopt the said system. Likewise, the university had complied in the CSC mandate under Section 5 of RA 9485 also known as the "Anti-Red Tape Act of 2007" based on the reduced processing time.

The systems and procedures in the delivery of services to the clients were also reengineered and improved. Moreover, the system minimizes the repetition of tasks because it can flawlessly add, edit, delete and store data in the database such as users, colleges, courses, majors, school year, sections, rooms, checklist, schedules, assessment (fees), faculty, signatories, subjects, curriculum, grades, students and payment. It can also save or store issued documents such as certification of grades, transcript of records, diploma and other documents in excel (.xlsx), word (.doc, .docx), photos (.jpg) and portable document format (.pdf) for future use. Furthermore, the system provides feature for printing of output or reports such as registration or enrollment forms, schedules, students, faculty, certificate of enrollment, certification of grades, examination permit, subjects, grades evaluation, official transcript of records, report of collection, and summary of collection. The system also contributes in the efficiency of the frontline service providers since it will automatically compute the total fees based on the registered subjects. Likewise, it will accept payment and automatically compute the remaining balance as it appears in the receipt; hence, student ledgers are always updated. The SIAS is continuously providing convenience to the clients.

Based on the result of the Student Satisfactory Survey along with quality of services, accuracy of records and reports, and timeliness had a positive result. The overall result reveals that SIAS is significant and effective instrument in the delivery of frontline services.

#### **Acknowledgement**

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