The Efficacy of A Third-Party Enterprise System in State Universities and Colleges (SUC) Setting

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Abstract

Enterprise Systems has become an essential element in the operations of academic institutions including the State Universities and Colleges (SUC). It is comprised of software packages that aim to automate and integrate whole business processes of an organization such as purchasing, finance, human resources, inventory management and information management. This research is focused on certain system integrations particularly the enrolment system in a SUC. It aimed at determining its efficacy on the scope of Users' assessment of the Enterprise System in terms of Net Benefits, System Quality and Information Quality only. The study utilized a quantitative descriptive research method employing an online survey to obtain the needed information. The instrument developed contained parameters on net benefits, information quality and system quality which required rating from the respondents using the scale of 1-4 with 1 as the lowest, and 4 as the highest. It reaped conclusive results and insights into how the enrollment system, is perceived by its first-hand users in the subject SUC. It provided a glimpse of how it could influence the holistic process in the university, it serves as system and user documentation which will be the springboard of further improvement and recommendations.

Keywords— Enterprise System, Information System, State Universities and Colleges, Net Benefits, Information Quality, System Quality

I. INTRODUCTION

Through the years, the concept of business service outsourcing is an unrelenting force that taking over the myriads of industries. The incorporation of an information management system is accelerating to be the norm. Straightforward competencies in the like of multiple currency conversions, reporting in the manifold of time zones, capacity to translate in various language among others are relegated to enterprise systems (ES). In brief, the rapid shift in business models are the key features of globalization that render traditional management styles to lag.

The education sector is also in a race to join the information system revolution to address massive and interlinking data management in aid of faster, reliable transactions which are springboards of policies and operational efficacy. Orientation and object integration slightly vary depending on the nature of the learning institution, for one is on the premise of funding source.

Privately administered schools relying on tuition fees for its operation are inclined on the context of business efficiency while state universities and colleges (SUCs) funded by the government basically mandated to cater to as

many students as its capacity can permit therefore turn to a Student Information System (SIS) to handle student data with paramount precision and utmost integrity (Custodio & Castro, 2016).

Meanwhile, ES is basically driven by its business value (Davenport, 2000), specifically on its tactical nature responding to the perceived specific needs of its patron. Given that the propeller of ES is business value, it is a question of whether it fits the IT needs of a state-run entity, in the SUCs setting in particular.

II. PURPOSE OF THE STUDY

The study is propelled as an attempt to understand and contribute to the rejoinder and exposition of ES in a SUC setting, particularly investigating an ES implemented in the premise of State University on the scope of student information system. The reconnaissance of the subject-SUC' employment of third-party ES basically accounts for the journey and experience through an interview conducted to key personalities involved in the conceptualization, acquisition and implementation of the ES and users, further reinforced by at least one parameter survey on its usability.

One paramount question that must be answered on the convergence of a third-party enterprise system and a government administered HEI is how fit is the service of the system to its recipient and how the stakeholders perceive the efficiency of the system in responding to their actual needs and requirements. On this premise, the study is conceptualized to gauge the quality of the Enterprise System regarding Net Benefits, System Quality and Information Quality in a SUC environment taking the point view of its users in the SUC.

III. SIGNIFICANCE OF THE STUDY

The study is a significant step in the laying of the foundation on the future of courses of action of the SUC towards the strengthening of its Information Management Systems. The outcome of the study can both serves as an empirical and conceptual scaffolding in the crafting of a responsive, SUC-tailored and sustainable IT roadmap. Such a roadmap will set forth the direction of a smart, research and data-driven governance within the University as it embarks to a more diversified and updated learning approach that can keep pace with globalization.

The study is anticipated to describe the efficiency of the system from its users' lens to serve as a piece of benchmark information that can aid the SUC in the formulation of Information Technology Development Imperatives derived from the empirical experience of the corresponding SUC.

IV. SCOPE AND DELIMITATION

By definition, Enterprise System is comprised of software packages that aim to automate and integrate whole business processes of an organization such as purchasing, finance, human resources and inventory management. This research paper focused and was limited only to the first phase or one part of the Enterprise System, which is the Enrollment system in a SUC, specifically at the CLSU. The Enrollment system in CLSU caters to the student's admission and registration, registrars' course and subject scheduling, faculty grade module, and enrollment reporting.

Deemed as only a segment of a broad-scoped research area, the study particularly covered the Users' assessment of the Enterprise System in terms of Net Benefits, System Quality and Information Quality only, banking on the credibility of the assessors being the constant users since the very first time of implementation and as far as dating back when the related procedures integrated with the system used to be manually carried out. It does not cover efficiency evaluation on the technical aspect of the system.

V. METHOD
Methods and Techniques of the Study
In the modern world of software developments, many techniques need to be carefully considered to get the most out of it. A method known to maximize the benefits of software development follows a system development

lifecycle, which defines an approach to be followed for each stage of the system's life.

The study utilized a quantitative descriptive research method employing an online survey to obtain the needed information. The instrument developed contained parameters on net benefits, information quality and system quality which required rating from the respondents using the scale of 1-4 with 1 as the lowest, and 4 as the highest. The study is descriptive in nature drawn from key stakeholders' opinion on the parameters.

The survey results which are presented in terms of frequencies and percentages of responses basically impart the raw perspective of the participants from were deduction on the fit suitability of the system according to the users' vantage point.

On the other hand, the overall or general assessment on the efficacy of the system was derived from the weighted mean of responses practically assuming the adage "the users know better". As such, it renders the outcome of the study still as valid and can qualify as a springboard of any IT development initiatives that the subject-SUC may wish to formulate. The quantitative descriptive design of the study and measurement employed can suffice in its simplicity considering the credibility of the raters as first-hand users of the system. Respondents are deemed of most reliable and have the utmost credibility to gauge the efficacy of the system considering that they have been around since the time that the process was purely manual.

Population and Sample of the Study

The respondents of the study were CLSU personnel from the Office of Admission, Management Information Systems (MIS) Office, College Registrar's Office and students who were all selected purposively on the criteria of being the system's constant users. The researchers used the purposive sampling technique to ensure that the integrity of assessment is based on constant interaction with the system thus ensuring the validity and acceptability of the research outcome. The researchers asked permission from the respondents of the study which gained 100% approval from all that has been initially identified to participate in the study. In computing for the acceptable number of responses or sample size of respondents' population, Slovin's formula was used. The population of qualified respondents is one hundred forty-seven, as per Slovin's formula with confidence level of 95% and 5% error margin, the acceptable number of respondents is 107 which the researchers pursued and was able to participate in the survey.

Research Instruments

The research questionnaire developed was inspired from an evaluation tool for enterprise system formulated with guided questions as evident from previously conducted research (Walther et al., 2013), (Gable, n.d.), (Wixom & Todd, 2005), (Wixom & Watson, 2001). Since it was a modified instrument, the help of the experts to validate the instrument was sought in the persons of the CLSU Dean of the College of Engineering and former Dean of Admissions, Department Chairperson of the CLSU Information Technology.

The researchers gathered the participants' profiles in order to assess and confirm their eligibility to participate in the study. To ensure that respondents would be truthful in their responses, the researchers have personally monitored the influx of responses online and from time to time reach out to identified respondents to inquire about any difficulty in accessing the survey. Respondents were given modified questionnaires that served as research instruments. The researchers gathered the participants' profiles in order to confirm and affirm their qualifications to provide data for the study. The researchers themselves were also an instrument for data collection and data analysis in quantitative research. This was because they must respond and adapt to the process of collecting and analyzing data, process all gathered data and interpret them accurately. To interpret responses, the Likert

scale was used, with 1 being the lowest rating and 4 being the highest.

Data Gathering Procedure

After determining the research problem, the researchers began collecting data for the study. They sent a formal letter to the institution's administrator requesting permission to distribute questionnaires and conduct a survey with the respondents. Prior to uploading the instrument, the necessary briefing was carried out to each respondents' group communicated via voice calls, SMS messaging and group chats.

Before the actual survey, pilot testing had been conducted per respondents' classifications in order to examine the functionality and assess the efficiency of the survey instrument. Since the survey instrument was uploaded online and some section of the survey have specific portions for a specific group of respondents, corresponding instruction per segment was incorporated into the survey. To prevent redundancy of responses from the same person, individual e-mail addresses were required for declaration while at the same time participants were assured of the researchers' adherence to the data privacy act.

Lastly, the researchers tallied the accumulated data from all the respondent' evaluation as an assessment for the quality of the Enterprise System zeroing on Net Benefits, System Quality and Information Quality in a SUC environment. Observations, comments, suggestions and recommendations from the respondents were taken into considerations to substantiate the evaluation results and serve as a guide to improve the quality and efficiency of the system.

Data Processing and Statistical Treatment

Input, throughput, and output strategies are all involved in data processing. The responses acquired from the research instruments are the inputs. The statistical approaches and methods used during the evaluation are included in the throughput. Data in the evaluation were given numerical equivalents to facilitate tabulation.

Finally, data were tabulated and tallied by calculating raw data to generate a frequency allocation and organize it methodically using a table (Paler-Calmorin & Calmorin, 2007).

Analysis of data was executed through descriptive statistics particularly employing frequencies, percentages and weighted mean for the responses which corresponds to the general point of view and assessment of the respondents. Specifically, the net benefits, system quality and information quality were numerically rated by the respondents using the scale of 1-4 which was then computed for its weighted mean with corresponding descriptive value.

The said descriptive equivalents were further scaled into four: a weighted mean of 3.5 to 4.0 corresponds to "Strongly Agree," indicating that respondents believe the developed system is very acceptable and meets the desired system criterion. The range from 2.5 to 3.49 is equivalent to "Agree," which means that respondents are satisfied with the enterprise system's performance and functionalities and that it is acceptable or meets the basic system's requirements. A mean of 1.5 to 2.49 indicates "Disagree," implying that respondents are only moderately satisfied with the system due to observed gaps between its actual and desired performance and functionalities. The average score of 1.0 to 1.49 indicates "Strongly Disagree," indicating the respondents' dissatisfaction with the system. It denotes that the system in use fails in many aspects and its performance and functionalities fall short of their needs and expectations and university requirements.

Table 1. (Data Measurement Reference)

Rating Scale	Descriptive Value	Scale for Weighted Mean
4	Strongly Agree	3.5 to 4.0
3	Agree	2.5 to 3.49
2	Disagree	1.5 to 2.49
1	Strongly Disagree	1.0 to 1.49

# VI.   RESULTS AND DISCUSSIONS
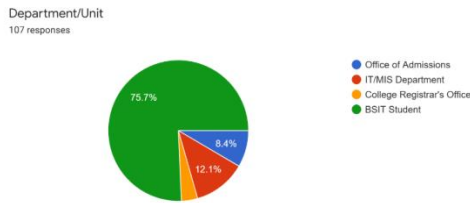

Figure 1. (Respondents of the Study)

The respondents of the study were selected purposively and comprised of CLSU personnel from Office of Admission, Management Information Systems (MIS) Office, College Registrar's Office and students (Figure 1), though most of them agrees that the implementation of an enterprise system has enabled the university to trim down expenses, it is worth mentioning that a significant percentage disagrees.

Net Benefits
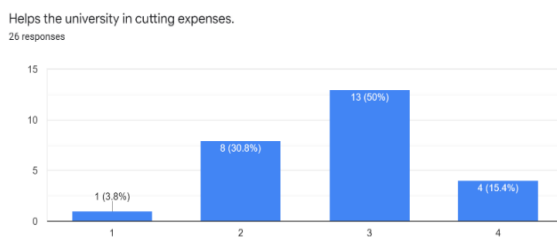
**Figure 2. (The system helps the university in cutting expenses)**

It can be contested that in the long run, implementing an enterprise system will be more resource efficient; rather than the traditional pen and paper process. Due to the methodical limitations of conducting a quantitative research, the opinions of the respondents about cost efficiency are not known, nor stated in the comments.
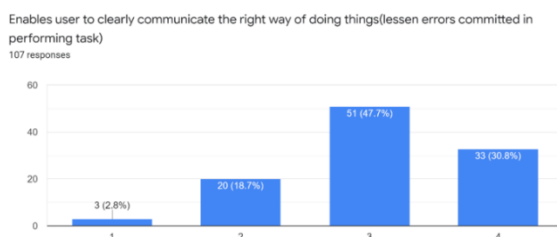
Figure 3. (Enables user to clearly communicate the right way of doing things)

The response from this certain question "Enables user to clearly communicate the right way of doing things (lessen errors committed in performing task", is also blended which actually reflects in some comments provided by the respondents; one of them wrote" I recommend that it be user-friendly or include a menu that provides instructions about how to use it, since not everyone here has enough knowledge, particularly in the first year."

This certain concern is particularly what the respondent has observed with the new students having a hard time navigating the system. Though the system has received a positive feedback under the system quality section, conducting seminars on navigating the systems, will be beneficial to all users, especially for the new students and or employees.
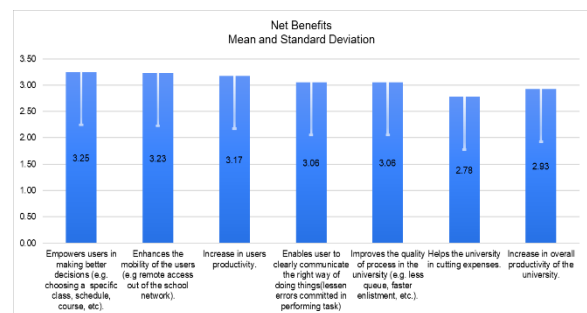

Figure 4. (Summary of Results on Net Benefits)

The results under net benefits, indicate an overall positive feedback, specifically from the students which are the majority of the users and respondents. Respectively, in some aspect, the same thing can't be said with the minority group, which consists of the university admin and staff.
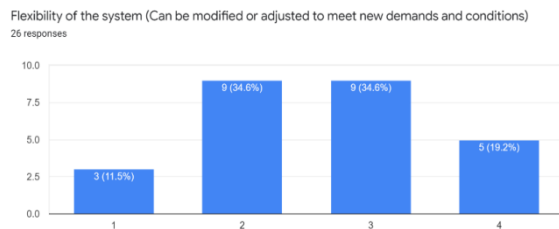
System Quality

It is quite amusing how the responses in system upgradeability are in the 50/50 range.
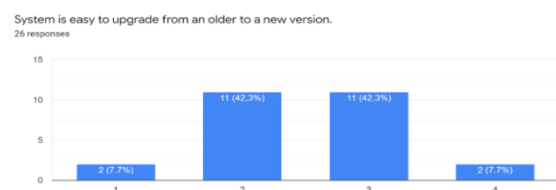
Figure 5. (System is easy to upgrade)

The same mixed results are expressed under the system flexibility aspect. Though amusing, it is not surprising that a third-party enterprise system will be difficult to modify and be able to meet new demands and conditions.


Figure 6. (Flexibility of the System)

Some respondents have expressed their opinion about these aspects under the comment sections. A respondent wrote" To accomplish all requirements as stated in the Contract of Agreement to fully operate the system by the University", from this statement, it seems that the provider has not fully accomplished the terms agreed upon by the two parties. Another respondent wrote" The current system being used by the university needs to be more adaptable as to what is really necessary on the enrolment procedures."
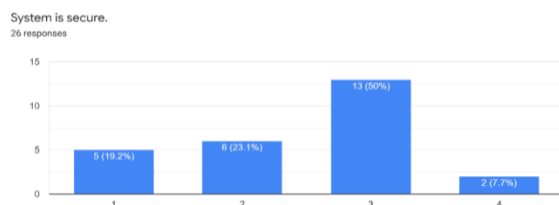

Figure 7. (System is Secure)

It seems that some of the staff are not confident with the security of the system as it shows in the responses and a certain respondent even wrote "If only we can start the system all over again, tapping our in-house IT's...", this statement though not directly pertaining to security, expresses doubt and disappointment to both the enterprise system and the developers.
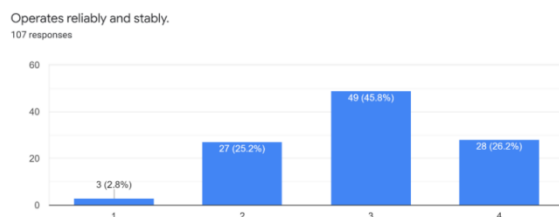

Figure 8. (Operates Reliably and Stably)

Reliability and stability are an aspect that all enterprise systems should prioritize, as this aspect can directly affect all other aspects of the system.
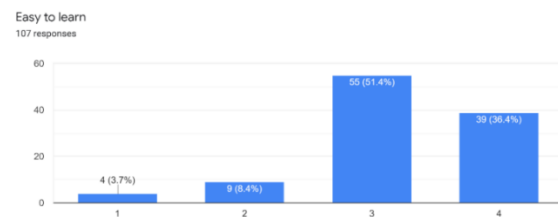
Figure 9. (Easy to Learn)

Also, the responses in the ease of system navigation are quite remarkable, with seventy to eighty percent of respondents satisfied with how easy it is to use and learn how to operate, followed by delivers key features and functionalities and system is user friendly.
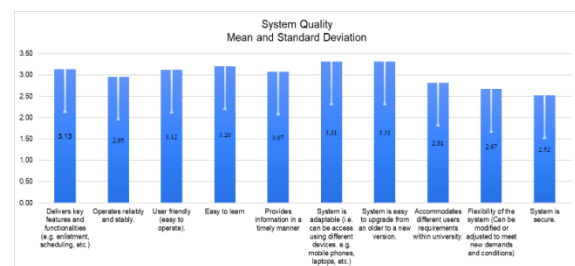

Figure 10. (Summary of Results on System Quality)

The results under the system quality section are surprisingly similar to those in the net benefits section. Overall, the enterprise system has garnered positive feedback under the system quality section, specifically in providing key features and functionalities that are essential to progress.

The majority of the respondents, the students, were quite satisfied with the quality of the system. However, the university admin and staff are again in the mixed responses specifically in the IT and MIS department.

Information Quality

Information quality is a crucial aspect of an enterprise system, if a system produces incorrect or inconsistent data, then it should not be implemented at all. Information management is in fact the main purpose of an enterprise system, to be reliable in the aspect of information quality is in fact the main goal.
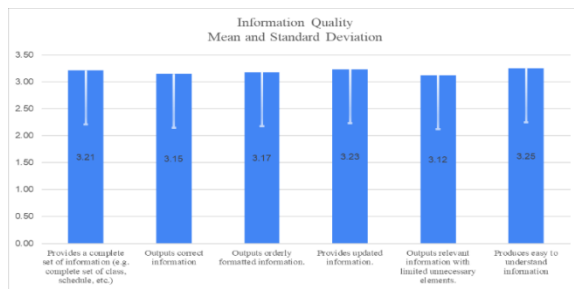
Figure 11. (Summary of Information Quality)

Overall, the enterprise system has garnered a positive feedback in all of the aspect under information quality, these responses are visualized in the chart below.

VII. CONCLUSION

The study has reaped conclusive results and insights into how third-party enterprise systems specifically the enrollment system, is perceived by its first-hand users in the subject SUC. It provided a glimpse of how it could possibly influence the wholistic process in the university, it serves as system and user documentation which will be the springboard of further improvement and recommendations particularly on the aspects of Net Benefits, System Quality and Information Quality.

Though the results have fairly indicative of the respondents' agreeability to the positive features of the Enterprise System, the quantitative rating can serve as benchmark to quantitatively measure improvement once the system undergoes further upgrade. Also based on the results, there are some features that definitely needs to be added and modified to accommodate the needs of the administration. It is undeniable that having such third-party enterprise systems has definitely improved the quality of the process and work in the university especially in transforming the conventional enrollment system to a fully online or web-based system.

However, further in-depth studies are very much recommended for conduct. The quantitative descriptive research that has been undertaken is an imperative step and a springboard towards a broader scope of study in the future. It lays the foundation for future research direction regarding the Enterprise System in the subject SUC. While the scope is just an aspect of the system, it is essential and very much valid in considering for a multi-faceted assessment of the system in the future, thus rendering the results of this study as a vital component; it is in fact a successful one in terms of the data provided. In order to provide a clear image of the role of the enterprise system, concretize its dynamics and interactions in the subject SUC, a combined qualitative-quantitative research should be done.

With reference to the future research perspective and scope of the study, the system and technical aspect of the enrollment system must be given full assessment or evaluation to fully customized and complement the whole enrollment process of the Central Luzon State University. Since the enrollment system is only part of the whole enterprise system, other phases to consider are the investigation and analysis of the existing systems utilized to completely address the efficacy of the enterprise system in the SUC.

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