Knowledge E
Engaging minds

Conference Paper

Issues and Concerns in the Implementation of the Students' Information System

Ariel O. Gamao and Mariannie A. Rebortera

Institute of Information Technology, Davao del Norte State College

Abstract

This study explored issues and concerns in the implementation of the Students' Information System (SIS). Employing purposive sampling, nine (9) key informants composed of students representing the following: Bachelor Science in Information Technology (BSIT), Bachelor of Science in Marine Biology (BSMB), Bachelor in Public Administration (BPA), Bachelor in Secondary Education (BSE), Bachelor of Science in Fisheries (BSFi), Bachelor of Science in Food Technology (BSFT), Supreme Student Council (SSC), Davao Reef (DR), Scholars were selected in this study. Data gathered through in-depth interview using the enhanced interview guide were coded, analysed, and clustered into themes. Findings revealed that issues and concerns were generally clustered as: 1.) Lack of End-Users' Training, 2.) Lack of Enthusiasm, 3.) Unavailability of the System, 4.) Lack of Technical Support, 5.) Difficulty to Register Accounts, 6.) No Proper Notice Posted, 7.) Unsuitable Location, 8.) Need for System Enhancement, 9.) Lack of Maintenance, 10.) Need for Additional Kiosks, 11.) Inaccuracy of Account Details, and 12.) Need for Alternative System. Results likewise disclosed the experiences of end-users have something in common. Hence, these entail tailored-fit responses to achieve the desired outcomes. The said controversies are rooted from diverse factors in the implementation of the developed software and developer plays a significant role in addressing matters to deliver the expected services and draw better implementation of the SIS. The Institute of Information Technology in its quest for quality and relevance may consider the issues and concerns that emerged in this study for enhancing the deployed SIS for better service to students.

Keywords: Issues and concerns, Student Information System, Institute of Information Technology.

1. Introduction

The progress in information and communication technologies and the touch screen technologies have changed the end user computing experience and environment.

OPEN ACCESS

These advancements have changed the way delivering of information and services. Students Information Systems can now be deployed through an information kiosk, whenever students have queries on their grades, subjects enrolled, even payments, students will just go to the information kiosk and use the system. Student Information System is part of these advancements.

Information technology is a critical component of successful organizations today. One type of information technology implemented in organizations is a data warehouse, a centralized collection of data about an organization gathered from various electronic sources which is accessed with decision support software. In a study conducted by Ling (2011) that students in higher education management information is very important to a data resource, it has a wide range of personnel involved, including the quantity of data, and the need for timely updates and so on. How to Improve resource utilization, how to do information management and rapid scientific inquiry, student information management has become a focus of the study.

Software quality covers the following capabilities: effectiveness, productivity, safety and satisfaction. According to the standard's definition, effectiveness provides for how users to achieve their goals with accuracy and completeness in a specified context of use. Productivity, as a software quality capability, describes the resources that are consumed by users in relation to the effectiveness achieved in a specified context of use. Safety, as a software quality capability, allows the reasonable level of risk to harm to people, property or the environment in a specified context of use. Satisfaction, as a software capability describes user's subjective response when using the software product (Borbely, 2011).

Satisfaction with information systems (IS), as an indicator of IS success, has been the subject of many studies since the inception of the field. Understanding the basis on which users form their perceptions of satisfaction has been a key area of focus. Of the many factors that have been studied, it is suggested that information quality, system quality and service quality are three major antecedents of user satisfaction with an IS. However, most studies have included only one or two of these determinants in their user satisfaction (Vaeza, 2013).

Accuracy and reliability are fundamental tenets in computer system design. Programmers can expect that the processor never exposes timing errors, and networking stacks typically aim to provide reliable transports even on unreliable physical media. When errors do occasionally happen, we treat them as exceptional outliers, not as part of the system abstraction. Cosmic rays can silently lip bits in DRAM, for example,

but the machine will typically use error-correcting codes to maintain the illusion for programmers that the memory is infinitely reliable (Sampson, 2015).

Al-Hussein Bin Talal University has developed its strategic plan to address the challenges facing the university in all aspects including Information and Communication Technology (ICT). The strategic plan identified the ICT needs of the university and prioritized them as follows: First, developing state-of-the-art infrastructure to meet the academic and administrative needs such as computer networks to connect all offices and laboratories together, computer servers, PCs, high-speed internet connection, and software tools. Second, developing software applications to satisfy the students' needs (Khattab & Fraij, 2011).

Maintenance plays an important role in the software development life cycle. A software project is delivered within estimated time only if all the phases of software development process are completed within estimated and primarily set up time. Various researchers have made substantial tools and techniques to achieve the quality of software maintenance phase. But at the same time, the field requires a future research work to enhance the quality of software and to reduce the challenges of maintenance phase. It has been estimated that there are more than 100 billion lines of code in production in the world. As much as 80% of it is unstructured, repaired and not well documented. Maintenance can relieve these problems (Gupta & Sharma, 2015).

A study that examines the dimensions influencing the past and present and speculates on the future of software deployment. Software deployment is a post- production activity that is performed for or by the customer of a piece of software. Today's software often consists of a large number of components each offering and requiring services of other components. Such components are often deployed into distributed, heterogeneous environments adding to the complexity of software deployment (Dearle & Dearle, 2007).

Computer software is a collection of computer programs or set of programs, procedures, algorithms and its documentation and became a part of daily life. Software performs the function of the program it implements, either by directly providing instructions to the computer hardware or by serving as input to another piece of software. Now a day's more and more software problems are caused trial-and-error programming. Solving the problems of software seems to be as an art and this art is a decent business for big software companies that provide technical support subscriptions so you can debug their products for them (Munir, 2011).

In today's computerized society every organization need a sophisticated "Information System" to compete in the business world. Some of the organizations outsource

their Information Systems and some implements their own custom designed information Systems. Business information systems implementation has been historically bothered by failures for which users resistance has been identified as an important reason. Users" satisfaction can be achieved by solving the psychological problems and technical issues which are creating psychological problems during the implementation of IS. Some important aspects during implementation of business information systems like, interdepartmental relationship, knowledge management, independence of tasks and user satisfaction importance is highlighted for organizations.

During the growth of a competitive global environment, there is considerable pressure on most organisations to make their operational, tactical, and strategic process more efficient and effective. An information system (IS) is a group of components which can increase the competitiveness and gain better information for decision making. Consequently, many organisations decide to implement IS in order to improve the effectiveness and efficiency of their organisations. However, a lack of awareness of numerous and varied challenging issues surrounding the implementation process could be problematic for the whole process. Furthermore, the problem of a lack of key success issues seems to be a serious obstacle for the management information system (MIS) implementation process. Additionally, MIS implementation has effects on an organisation and these effects are related to the consequences of the business processes. Consequently, this issue is critical and crucial for an organisation to consider when they implement a new MIS (Artit, 2012).

Student Information Systems has seen to provide necessary information for students needing information regarding financial transactions and academic information within a click of the button. The Student Information System of the Institute of Information Technology in partnership with the Student Supreme Council and Davao Reef had been implemented for about ten months already and has been sought after by students with needs to know their own academic performances and financial transactions. Moreover, the Registrar's Office and the Assessment Office had been unloaded with burdens in entertaining students' queries on their respective grades and financial transactions respectively due to the fact that the said Student Information System though the Student information kiosk has been used by many of the students.

In the implementation of the SIS, various issues and concerns immerged along the way as experienced by students when using the said computer-based system. Thus, this undertaking was indeed an effort to remedy this gap by exploring the issues and concerns on the emerging issues and concerns on the implementation of the Students Information System (SIS). The findings of this study would serve as inputs for the

enhancement of the deployed SIS of the Institute of Information Technology of the Davao del Norte State College, Panabo City.

2. Purpose of the Study

The intent of this case study was to explore the issues and concerns in the implementation of Student Information System (SIS). This specifically looked into the emerging issues and concerns in the implementation of Student Information System (SIS) and found out how implementers responded to the said issues and concerns. This further investigated the other dimensions that may have caused the emergence of these issues and concerns.

3. Research Questions

Towards the attainment of the purpose of the study, the research was directed to answer the following:

1. What are the emerging issues and concerns in the implementation of Student Information System (SIS)?

2. How do system developers respond to the issues and concerns?

3. What are the other dimensions that may have caused the emergence of the issues and concerns?

4. Methodology

This study employs a qualitative research design specifically a case study. According to Creswell (2009), the process of qualitative research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data. In this study, this method served as a means for exploring and understanding the issues and concerns in the implementation of the Student Information System and how these will be addressed by the developers of the said software and the concerned implementers.

The locale of the study covered the Student Information System (SIS) Kiosk of the Davao del Norte State College located at the Learning Information and Resource Center (LIRC).

4.1. Informants selection

The informants of the study will be selected following a strategy called purposive sampling. This strategy is used to select "information rich" nine (9) key informants for interview which will include the students of the Bachelor of Science in Information Technology (BSIT), Bachelor of Science in Fisheries (BSFi), Bachelor of Science in Marine Biology (BSMB), Bachelor of Science in Food Technology (BSFT), Bachelor in Secondary Education (BSE), Bachelor of Science in Public Administration (BPA). This will also include a scholar, an officer of Supreme Student Council (SSC), and a representative of the Davao Reef (DR) of the Davao del Norte State College.

Table 1 as presented hereunder shows the number of key informants of this study.

TABLE 1: Distribution of Key Informants.

Key Informants	Number
BSIT	1
BSFi	1
BSMB	1
BSFT	1
BSE	1
BPA	1
Scholar	1
Davao Reef	1
SSC	1
TOTAL	**9**

4.2. Research instrument

The main instrument used in the collection of data was the researcher-made interview guide. This was used to guide the researcher to explore the issues and concerns in the implementation of the Student Information System: Basis for System Enhancement through in-depth interview. These contain grand core question, several sub questions and probing questions. The main instrument though is not subjected to trial testing, is enhanced by the experts. Suggestions and comments were well-taken and noted in the final draft of the said instrument.

4.3. Data collection procedures

The data were gathered through interview. Approval from the chair of the Council of Deans was made to conduct the in-depth interview to the key informants. Upon approval, consent was sought first with the participants. The face-to face interview was done to the selected students of the different Institutes. Gathering of documents to support the responses of the informants was also made. Follow-up interviews through phone call were made for clarification.

4.4. Data recording procedures

Before entering the field, approaches in recording data was made according to plan (Creswell, 2009). Proper protocols were observed in the recording of data. The process included areas on the date, place, interviewer, and interviewee. Instructions for the interviewer to follow were given. The questions started from the grantor question, then to the subsequent questions and then to the probing questions. Note taking and audiotaping were used to record the responses.

4.5. Data analysis procedures

Interview transcripts were analysed following the qualitative analysis procedures recommended by Miles et. al (2014). Four main steps constituted the qualitative analysis process. The researcher had carefully read the transcripts and attached codes (Creswell, 2009) to specific statements that explored emerging issues and concerns in the implementation of the Student Information System (SIS): Basis for System Enhancement. Then, the retrieved statements were coded as responses of the selected students of the different Institutes; open-coding was done after only carefully rereading the statements at finer level of detail, staying close to the participants' language (Strauss et al., 2008). After the open-coding was done, they were sorted into categories; and identified and described the categorical themes that emerged from the data. The emergent data (Creswell, 2009) described the issues and concerns.

4.6. Reliability and validity

Reliability procedures as suggested by Gibbs (as cited by Creswell) were followed in this research. After the conduct of the in-depth interview, the transcripts of responses

were checked to make sure that they do not contain mistakes or errors made during transcription. After checking the transcripts, coding was done to categorize qualitative data and to describe the implications and details of these categories. The codes generated in the analysis were classified with the adviser. The codes developed were cross – checked by comparing results that are independently derived.

4.7. Qualitative write-up

Coding, summarizing, and pattern seeking and synthesizing were made in analyzing the qualitative data to answer objectives. Coding was done through organizing the data into reasonable and meaningful units. Codes were then determined either on a priori basis or emerging codes. Summarizing the coded data was done by examining all similarly coded data and summarizing it with a sentence or two that reflects its essence. Computerized sorting of data was common and effective. Synthesizing identified the relationships among the categories and patterns that suggested generalization. The researcher interpreted findings inductively, synthesized the information, and drew inferences. Pattern seeking began with the researcher's informed hunches and ideas. Tentative patterns were identified and additional data collected were determined if they were consistent with those patterns. This was characterized by enlarging, combining, subsuming, and creating new categories that make sense.

4.8. Ethical considerations

Creswell (2009) stated that good writing practices will help to ensure a consistent and highly readable proposal. He added that it is important to engage in ethical practices and to anticipate what ethical issue would likely arise. Therefore, proper protocol was observed in order not to embarrass any of the respondents to be able to gather all the expected information without reservations.

It was important to capture everything the responses of the informants to every question during the gathering of data. The conversations were recorded using a tape recorder. The informants were informed prior to the interviews to have the respective approval of the tape recording of the interview.

5. Results and Discussions

Key informants shared the different issues and concerns in the implementation of Student Information System (SIS): Basis for System Enhancement showed different reactions to handle the different issues and concerns. In the in-depth interview and document analysis conducted, the following themes emerged: lack of end-users training, lack of enthusiasm, unavailability of the system, lack of technical support, difficulty to register accounts, no proper notice posted, unsuitable location, need for system enhancement, lack of maintenance, need for additional kiosks, inaccuracy of account details, and need for alternative system.

5.1. Lack of end-users training

The Student Information System (SIS) was just implemented in April of 2016, where students saw it as a new technology originally deployed at the College Gym entrance near the Office of the Student Services (OSS). Being newly developed during that time, students were curious as on how to use the system. As per design, the system is easy to use. However, students complained because they don't know how to use the system. Being part of the implementers, the Office of the Student Services, planned to conduct an orientation on how to use the system and to introduce the system as well. It was agreed that the said orientation for the SIS shall be included during the general orientation so that it will be witnessed by general population. The document analysis on the general orientation showed that there was an orientation for the SIS. Despite the orientation conducted in June of 2016, some students still did not know what the SIS was all about. Moreover, key informants revealed the following:

> "The system was not properly implemented in terms of proper dissemination to students or there is no proper orientation. I only once used the system. I think not everyone was properly oriented about the use of the system" (Clar).

> "I think there was no proper orientation on how to use the system. Because in my case, I learned using the system through other students teaching me how" (Del).

With the circumstances where students still did not know what the SIS was all about, the Office of Student Services (OSS) conducted another orientation that included the

use of the said software in the second semester of 2016-2017 but there were still few students that were not properly oriented with the SIS as shared by the informants:

> "In an orientation in a big crowd, students don't usually understand things by heart. They are just there just for the attendance. It would be nice that orientation shall be done in small group students at least we can see the one demonstrating is clicking on the system. Anyway, the system is user-friendly." (Del).

Lack of end-users training has been a major issue and concern in the SIS where most students learned how to use the system by themselves. The conduct of the orientation in a big crowd twice, one in the first semester, and one in the second semester seem not enough to inform students on how to get acquainted with the system.

Bowers (2010) supported the issue and concern on the lack of end-users training that it amazes him that some companies don't see the value of proper end-user training. They're willing to pay thousands of dollars for a new product that is supposed to improve productivity but aren't willing to do the one thing that will help with that product's adoption in the enterprise. A good end-user training strategy will make new software deployments more cost-effective. It is also understood how frustrating it is for IT when they're work is not used simply because end-users don't know *how* to use it. Dockery in 2014 supported Bowers that there is mounting evidence that getting end-user training wrong can come at a high price. This is the very reason why the Office of Student Services conducted orientation to let the students understand how the system works.

5.2. Lack of enthusiasm

According to the hardware specifications of the SIS kiosk, the system's processor is a high-end processor. Meaning, any queries done by any clienteles at any modules in the system is super-fast in terms of its speed. With this, the SIS is built for fast response on queries available in the system. Aside from speed, students fall-in line due to its convenience as revealed by informants:

> "My classmates were enjoying the SIS. It is just convenient for them to use the system because they don't need any more to fall-in line at the Registrar's Office just to know their respective grades" (Abd).

> "I have been using the SIS ever since it was implemented. I got interested on it because its more convenient using the system. There is no need for

students to fall in-line at the Registrar's Office just to inquire for our grades and it would be easy for us to assess ourselves if we pass of we failed in our subjects" (Del).

However, there were few students whose reason of using the system is to only see their grades. After knowing their grades, it would take another submission of grades for them to come back for the SIS. This means that students would only use the system during submission of grades by their respective professors and instructors. However, key informants also disclosed:

"I just used the SIS during the first sem of 2016-2017. However, by 2nd sem, I never used it anymore because I was so discouraged of the system. I just didn't know how to use the system" (Clar).

"I never came back to use the system since then because I believe it would still the same problem. Because the system should display the right information on my case. The bug to that effect must be fixed so that it would be consistently accurate to all students" (Abd).

The issues and concerns on the lack of enthusiasm is evident that some students feel being discouraged in using the system resulting not to anymore use the system built for convenience. This issue and concern is one of the outcomes when students don't have clear understanding on what the system has to give. When students don't exactly understand what the system is all about, there is lack of interest in using the system. It is a known problem that with any given software or programming environment, end-users do not necessarily adopt all the features and functionalities made available in the system. As a matter of fact, Bhavnani, et al. in 1997 pointed out how even experienced users fail to realize how to use features to fully capitalize the functionalities of the software.

5.3. Unavailability of the system

Since the implementation, the system has been deployed for use by its clienteles at the College Library. Students use system in order not to go to the Registrar's office to avoid the line of students inquiring about their grades. Meanwhile, students use the system to inquire their account balances and assessments instead of going to the Cashier's and Assessment Windows to avoid the long pile of queues of students inquiring for that purpose. The objective of the SIS is to provide a one-stop shop for students longing

to know their grades and account balances at the same time. However, there were reported cases that the system crashed when being used. The informants disclosed:

"Sometimes the system crashes. Afterwards, the system can no longer be used. It will crash when the system has accommodated plenty of users already" (Abd).

"And there was also a moment or moments that the system crashed, meaning the system can no longer be used during that time" (Win).

"During the first time, I used the system and it was still okay but during the second time, it was already lagged and the system was out of order. I also heard from other students that SIS was out of order despite many students would want to use the system for the grades, it's just being turned off" (Clar).

"There is a main concern on the SIS, the system sometimes leads to system crash. Sometimes the biometrics scanner could hardly recognize my finger print. When a student is unluckily using the system and at the same time the system crashes, students make fun of the student using the system as if his picture on the profile is the reason why the system crashes" (Del).

"Sometimes, the screen monitor malfunctioned based on my experienced. Just like what I've said a while ago, the level of the sensitivity of the touch screen monitor is low. And as I noticed, sometimes system is turned off, meaning out of order. I don't know why. I did not try to ask the librarian" (Mar).

The usability of the SIS depends on the availability of the College Library. Meaning when the Library is closed, students can no longer access the SIS. This issue and concern is a major factor why students cannot use the SIS. Another reason of its unavailability is that the SIS is out of order due to system crash. In which this matter rely very much on how fast is the response time of the persons in-charge to fix the problems encountered by its clienteles. Various reasons behind of its late response of students' seeking for assistance, firstly, some students don't care asking for assistance when sudden system crash amidst of using the system. Secondly, personnel in-charge are not designated to have a dedicated focus on the SIS because the developer is also an IT Faculty busy conducting classes while the other one is a computer laboratory technician in which the technician cannot easily abandon his task as laboratory in-charge just to attend the needs to fix the system at the College Library. Taking time to respond makes the SIS out of order for a time.

Foster in 2014 supported the emerged issue and concern that planning and preparation for this system implementation should start long before the completion of the acquisition. If the implementation is not carefully planned and all factors considered, the exercise can be very frustrating and misrepresenting of the system and professional responsibility towards the systems implementation.

5.4. Lack of technical support

Any software when being used by users must have technical support on standby in case of system trouble so that there will be a guarantee that someone will attend to their needs. In the case of the SIS, the developer and his colleague serve as the personnel in-charge when students need them. The system in-charge is expected to always monitor the system specially it is located at the College Library and the personnel are stationed at the Institute of Information Technology. However, there were times that the SIS was out of order due to system crash. The details are manifested in the statements of the key informants, as follows:

"During the time I used the system, there was a fellow student who assisted me in using the system because there was nobody who is in-charge of the system. I just logged in using my finger print and then he was just the one operating the system for me because I didn't know how to use the system" (Clar).

"During that time, there were many students lined-up to see their grades on the SIS. Somebody called for help and it took the technician to respond. Other students could not wait anymore for the system to be restored. While others really waited until it was fixed. During system crash or system lagging, maybe the reason for the delays in responding to the issues and concerns is due to the fact that those personnel also have other concerns other than fixing the error at a given time. Meaning his attention is divided between his main work and the SIS" (Del).

"There were times that they did not immediately respond to these issues and concerns due to their schedules. For we know that they are not just the developers of the system but they are also teaching Information Technology Subjects as well" (Mar).

"And then about the technical support, sometimes I heard this from my fellow students that they need a technician to fix the problem they currently

experience but it took time for the said technician to fix the problem. Anyway, I am not surprised with the delays in the response to fix the problem because I know that the technicians themselves are busy doing their main tasks other than fixing the problem on the SIS. That is why I am hoping that there will be person whose task is to maintain the system as part of his daily routines" (Win).

On the other hand, few students do not know as to who are the persons to ask for assistance when problem is encountered on the system. The key informant expressed:

"I don't have any idea as to who is the right person to go to but things like that, it should be the IT people that we can go to but no particular person (Abd).

The common reasons why students need for technical support are the following: the computer lags, my account is displayed is not mine even if my finger print used to log in, and the student cannot login. These are just the issues and concerns experienced by the students using the system. These issues and concerns when not attended would give impression to its clienteles an impression of poor software implementation due to unresponsive to clients' needs and concerns. These matters serve as a wake-up call for the implementers or developers of the SIS that in software engineering, the responsibility of the developers is not only up to the implementation but it would still be up to post-implementation phase. The SIS will be useless unless someone will take care of the queries or concerns of students as users of the system.

5.5. Difficulty to register accounts

The developers scheduled for accounts registration by Institute. Students go to the computer laboratory for the registration of their account before they can use the system. Students were asked to scan their preferred finger print to be used for the system login. The system users were asked to scan their preferred fingers three times to confirm the validity of their login during the registration process. However, it was evident that the person in-charge is not always available for the registration. Meaning students cannot just go to the Institute of Information Technology for the registration of their accounts because the said personnel are also busy doing their daily routines aside from attending the needs for the SIS. The key informant stated:

> "In my experience during the registration, I was having problem in finding the person in-charge for the registration. I think person in-charge for the registration is not always available" (Del).

The issues and concerns pertaining to difficulty to register accounts happened when students set to register where nobody was around. Having no personnel in-charge who is responsible to register is still a major factor to consider because registration of accounts is an essential phase in the implementation where all modules in the SIS depend on the data entered during the registration. Although there were schedules for each Institute where students have to go to the Computer Laboratory to register, still the said personnel is not always available for that purpose. Issues and concerns like this when not attended would still make the software useless because it is not responsive to clienteles needs.

5.6. No proper notice posted

Posting of notices near the kiosk or from within the kiosk to inform its clienteles about the current status of the SIS is essential. This issue emerged during the time that the no notice was posted to inform the users about the status of the system. The key informant disclosed:

> "There was no notice or sign as "out of order" to notify students on its availability" (Clar).

Having no proper notices posted for the current status of the system still a major role of the implementers to continue informing the students the current situation of the system. For example, when the SIS is out of order and no notice posted on the kiosk, the situation would give an impression to other users that the system is still available. When users think the system is still available and tried using it, to some users it would be discouraging to the system users. Issues and concerns like this still play a vital role in the implementation of the system.

5.7. Unsuitable location

The SIS kiosk was originally installed at the College Gym entrance near the Office of Student Services (OSS). The users experience system crash due to system lag. The developer found out that the main cause of its inconvenience is the touch screen monitor that cannot withstand the uncontrolled temperature of the place. Therefore,

the system needs to be installed at a place in the College that has a controlled temperature, where many students can still use the system. Eventually, through an informal negotiation with the College Librarian, the system was temporarily transferred to the College Library for continuous service. As per observation, the availability of the SIS is dependent on the availability of the Library, when its closed, students also cannot use the system. These thoughts were from the informants hereunder:

"I think for the SIS to be more accessible to the students, it would be better if it would be transferred near the Registrar's office because at least it would always be available and accessible to the students. The disadvantage of the SIS installed to its current location is that the availability and accessibility depends on the library. I mean when the library is closed, students cannot also use the SIS" (Clar).

"If it would be at the library, there would be limited of users can use the system sir. So far as I noticed sir, the students lined-up for the SIS is very long as if making line for the NFA rice and its not suitable to the library. With good number of students queued-up for the SIS needs a wide space other than at the library. I remember it was installed first at the College Gym lobby near the OSS. It would good if it will be place near the Registrar's Office" (Del).

"It's okay for me to put the kiosk at the library. But there were times that the library will close and students would like to access the SIS. Unfortunately, students cannot use it. So the availability of the system will be affected" (Mar).

"I found its location is inappropriate and for me the KIOSK must put in the location where people can easily see the system, just like the location of our cashier that is really visible by that you need not to ask where the KIOSK is, the current location of the kiosk may pose confusion to the students if it really exist and by changing its location to a place where the system can be found easily. The location of the SIS which is at the library, because the accessibility and availability of the SIS is actually very much dependent on the library. When the library is closed, the SIS cannot be used" (Win).

When students started to use the system, students tend to make unnecessary noise about their grades. The incidence happens when group of friends use the system, teasing one another happens especially when one has low or failing grades and as disclosed by the key informants:

"With the presence of the SIS at the library will no longer make the latter a convenient and conducive for learning due to noise the SIS brings because students make noise as they see their grades and others. There are mixtures of reactions as we see our grades. Lastly, the preferred place must be secured for the SIS" (Del).

"Right after the exam week students begins to expect from the respective teachers to submit grades. Meaning, students might build unnecessary noise at the SIS kiosks. So, students studying at the library might be disturbed" (Abd).

The implementation phase yield different issues and concerns. One of the issues and concerns as mentioned by the key informants is installing the SIS at the unsuitable place. When group of students lined-up for the system, students tend to make unnecessary noise at the kiosk because of the mixtures of feelings when they see information displayed on the monitor especially about grades. There is an approved policy in the use of the library, where students must always maintain silence at any cost.

5.8. Need for system enhancement

Developing customized software is a tedious task because of its objectives to achieve high level users' satisfaction. This is only done when the developer stays very close to its perceived system users. During its implementation phase, developers play a crucial role in hearing all users' feedback about the system because this is the best way of making that information as basis in improving the deployed system. Since the implementation of the SIS, various issues and concerns were noted as experienced by its users. One of those issues and concerns was disclosed by the key informants:

"I think there is a need for the SIS to be enhanced to be more attractive to students" (Clar).

"Adding some transitions and effects as improvements in terms of catching attention for its clienteles is essential. The touchscreen monitor is not that sensitive enough when touched, where students might find the system hard to operate" (Mar).

"Aside from the biometrics, the system should support usernames and password for those that have problems with their finger prints. Actually, I have known few students with problems of their finger prints. That is why, up to

this moment, they can't use the system due to the fact that they can't login" (Abd).

During the implementation phase, students found some aspects of the software that needs for improvement. The identified issues and concerns on the software is vital for making all of these as basis for improvement of the system. Taking long time to enhance the system would somehow lead to deterioration of systems usage.

5.9. Lack of maintenance

Maintenance phase is vital after the implementation phase in the Systems Development Life Cycle (SDLC). This makes any software being used for a period of time after its implantation due to its maintenance. In the maintenance phase, systems are fixed when users encounter system bugs along the way to assure its continued use by its users. Users experienced that the SIS lacks system maintenance. Key informants articulated their experiences on this concern, as follows:

"It should be well maintained to make sure it full implementation" (Car).

"Primarily, there is lack of maintenance of the system. Maintaining the software, hardware, and the sort of things is vital to its clienteles" (Mar).

The identified issues and concerns on the lack of maintenance somehow gives the developer to enhance the system to respond to its current users' needs. In the implementation phase, it is expected that the implementers monitor the systems usage in making the system still in good shape to catch-up the current needs of the users.

Foster in 2014 stated that poor implementation can cause the failure and rejection of a well-designed software system that actually meets the needs of its intended users. This underscores that software engineering does not end after product development. Users must be trained to use the product. To this end, the system must be installed, configured and monitored.

5.10. Need for additional kiosks

Building one SIS kiosk would need around sixty thousand for the computer hardware and the materials to be used for building the kiosk. The one (1) unit SIS kiosk is serving the entire student population. Students chose to use the system for its convenience for they no longer line-up at the Registrar's office waiting to be entertained by the personnel to inquire about their academic performances. At the same time, students

prefer to use the system instead of going to the Assessment Window waiting to be entertained by the personnel in-charge. As disclosed by the key informants:

> "I have been using the SIS ever since it was implemented. I got interested on it because its more convenient using the system. There is no need for students to fall in-line at the Registrar's Office just to inquire for our grades and it would be easy for us to assess ourselves if we pass of we failed in our subjects" (Del).

> "My classmates were enjoying using the SIS. It is just convenient for them to use the system because they don't need any more to fall-in line at the Registrar's Office just to know their respective grades" (Abd).

When the number of students began to see the importance of the SIS, eventually, they began to use the system. As the number of users grows bigger, the queue of students waiting to use the system begun to build-up. As a result, students start to get impatient in waiting for their turn to use the system due to its lack of kiosks serving students' needs. As evidence, the key informants shared:

> "If possible there will be additional kiosk to be acquired to handle queries of students, because if we will only rely on the existing one (1) unit of SIS kiosk, students queuing at the library might only be able to use the SIS on the next day. It would also be better that the additional unit may be place outside the College Library so that it won't build a congestion to the library inquiring grades and also not to disturb other students doing their research at the library. it would be convenient that each institute shall be installed with the SIS so that students' queries per institute can all be accommodated" (Del).

> "If there is enough budget, why not? It's for everyone's convenience. The more units, the better" (Mar).

> "There is only one kiosk catering the entire population is not a good idea. Like for example during enrolment, considering that almost all students would want to see their grades from the SIS. There will be a huge build-up of line for students waiting to use the system at the library" (Win).

The growing number of users of the SIS makes the system users to line-up in order to use the system. With the intention to cater all the students who want to use the system at a given time would mean to allocate big amount of budget considering that the implementers spent around sixty thousand pesos (P60,000.00) in building only one kiosk for that purpose of making a one-stop-shop kiosk.

5.11. Inaccuracy of account details

When the software is implemented, the developers make sure that data need for the system are accurately entered during data entry because everything follows thereafter. Before the system was implemented, the developers scheduled for the registration of students accounts at the computer laboratory. The schedule was done by Institute, where careful steps were executed to make sure of its accuracy. Despite the intention to register student accounts accurately, there were incidences where students experienced issues as disclosed by the key informants:

> "I let my classmates first to use the system and I saw that the information displayed right after logging in is accurate. However, when it was my time to use the system, after I have my finger print scanned by the biometric scanner, the picture displayed is mine but the name and other details that are displayed belong to the one before me. Meaning, the account registered through my finger print is not mine. When I tried to see my grades, there was nothing displayed. If I am the first to use the system sir, it's my picture and name. However, there is no data being display other than the ones I mentioned. So, I just logout. I can't use the system anyway" (Abd).

> "So far as I heard from other students, we need to register to the system database. So, if the registration is successful, it would be difficult to incur such problem. I think the system can't be wrong" (Del).

> "As I also heard from fellow students, there is a problem in terms of its accessibility because sometimes when students login to the system, the system redirects to a different person's account. It is not my personal experience but an experience of my classmate when logging in to the system it's different account information that appeared on the screen" (Win).

The inaccuracy of account details surfaced as one of the issues and concerns is vital to the system considering the system is built for students use to see their grades and account details. This matter sends a strong message to the implementers that such problem will no longer happen in the future. During the registration of accounts, if the personnel in-charge not serious in processing data during the registration, problems like this would eventually surface in the open when not prevented at the start.

5.12. Need for alternative system

With a big budget needed to build one (1) SIS kiosk to serve as one-stop-shop of student clienteles, the entire student population cannot be accommodated by the system. This matter is vital to the College in giving fast and accurate service to its clienteles through the SIS. Considering that the Faculty of the Institute of Information Technology are capable of designing another model that will serve the same purpose as the kiosk with the use of different technologies in order to make use of the available infrastructure that the implementers need not to purchase additional hardware.

> "Systems used to be web-based and by that we could improve the SIS by making it through online. Our school has its IT department and its improving in terms of system development and why not search for the best for solution for SIS's problems? And if the system be improved and launch it into the web, students can access the system and check their grades in their homes and even anywhere and anytime" (Win).

The informant also added that aside from developing for a web-based application, the developer may design for a system that will make use of students' smart phones, he stated:

> "A mobile application since today people use their smart phones to access information through the web and considering that it is on the phone you need not to look for URLs you could just directly check your information in a second, so if the students will just go the IT department and ask for the application APK installer then if they have Internet connections or data connection they can already view their information instead of going to the KIOSK and making fall-in line and those students living far the school need not to go to the school just for the purpose of using the SIS. At least, with this the long line caused by the queuing can be reduced if not prevented. Lastly, students can save money by not going to school just to access the SIS because they can already access it from home or from anywhere, anytime" (Win).

Considering the big amount of money needed to build for additional kiosks, the need to design for alternative systems that will run parallel with the kiosk with less amount of money is necessary to maximize the number of its users using at the same time anywhere and anytime of the day via an Internet connection. This will also hone the

programing skills of the developers and invite other faculty to build systems for the use of clienteles of the College.

6. Conclusion and Recommendation

The implementation of the Student Information System (SIS) is militated with numerous issues and concerns towards how the developer can enhance the implemented developed software in terms of lack of end-user training, lack of enthusiasm, System crash, lack of technical support, difficulty to register accounts, no proper notice posted, unsuitable location, need for system enhancement, lack of maintenance, need for additional kiosks, Inaccuracy of account details, and need for alternative system. These matters serve as basis for the enhancement of the computerized System Information System (SIS) for the benefit of the clienteles that demand a fast response of their queries on grades and other information they want to browse with the touch of the screen. This undertaking also opens the opportunity of the IT Faculty and even IT students that such technology can be tailored-fit to achieve its highest acceptability by its clienteles.

While these issues and concerns are rooted from varied dimensions, the Institute of Information Technology through the developer plays a significant role in looking into these to come up with, if not best, at least better implemented software.

Premised on the findings, the following are subsequently recommended:

1. Come-up with clear approved guidelines on the implementation of the software so that it would be clear to see as to who are the persons responsible for the kiosks.

2. The kiosk should be transferred near the Registrar's office to become part of the basic services of the latter.

3. If budget warrants, acquiring additional unit of kiosk is highly recommended to ease the build-up queues of students patiently waiting to have their turn to use the system. However, the Institute of Information Technology shall make an alternative version of the system such as web-based and/or mobile apps for students to be able to access the system from home or anywhere through Internet connection. Thus, these require purchasing a web server.

4. The system needs to undergo a refinement of the system to make sure the continued use.

5. There will be a trained software in-charge who may be responsible for the registration of students to avoid inaccuracy of account details during the registration. At the same time the said personnel or student-personnel will serve as the official person to attend students' query upon notice by the Registrar's office.

Author's Note

ARIEL O. GAMAO, Ph.D in Educational Management graduate, Doctor in Information Technology student, associate professor.

e-Mail: ariel.gamao@dnsc.edu.ph and ayhel32@gmail.com.

MARIANNIE A. REBORTERA, Doctor in Information Technology student, assistant professor.

e-Mail: mariannerebortera@gmail.com

References

[1] Artit, K. (2012). Management Information System Implementation Challenges, Success Key Issues , Effects and Consequences: A Case Study of Fenix System. Jokoping International Business School., 1(May), 7–67.

[2] Borbely, M. (2011). Measuring user satisfaction with a library system according to ISO/IEC TR 9126-4. Performance Measurement and Metrics, 12(3), 157–171. https://doi.org/10.1108/14678041111196640

[3] Creswell J. (2009). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches.

[4] Corbin, J., & Strauss, A. (2008). Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory (3rd ed.). Thousand Oaks, CA: Sage

[5] Dearle, A., & Dearle, A. (2007). Software Deployment , Past , Present and Future This contains the following Information which may already be shown/footnoted in the first page of the manuscript: (1) author/s' full name and affiliation/s (department and institution); (2) acknowledgements (of persons, groups, organizations who provided technical and/or financial aid); (3) disclaimers (e.g., statement on

conflict of interest); and (4) contact details of the corresponding author.Software Deployment , Past , Present and Future.

[6] Gupta, A., & Sharma, S. (2015). Software Maintenance: Challenges and Issues. Issues, 1(1), 23–25.

[7] Khattab, S. Al, & Fraij, F. (2011). Assessing Students' Satisfaction With Quality Of Service Of Students Information System. Management and Marketing Journal, (April), 111–125.

[8] Ling, X., & Dissertations, P. (2011). Student management information system design and implementation, 0–3.

[9] Miles, M. B., Huberman, M. a, & Saldana, J. (2014). Drawing and Verying Conclusions. Qualitative Data Analysis: A Methods Sourcebook, 275–322. https://doi.org/January 11, 2016

[10] Munir, M. (2011). Problems During Implementation of B Usiness. University of Boras, School of.

[11] Sampson, A. (2015). Hardware and Software for Approximate Computing.

[12] Vaeza, R. (2013). User Satisfaction with Information Systems : A Comprehensive Model of Attribute Satisfaction, (April).