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Reconnaissance of University Student Sentiments towards the MIS Services

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Abstract A pragmatic understanding of a student campus life relative to the services given by the university where the Management Information Systems play a vital part in keeping all offices going during the enrollment period. Sentiments of the 173 First Year BSIT Students were carefully analyzed through text mining employing the phenomenological design in order to understand their lived experiences transacting the office. Sentiment analysis was employed using different tools such as r-programming for generating a word cloud, word association, word frequencies, word frequency graph, word tree, and phrase net. The views of the respondents revealed a negative impressions and experiences when transacting the office, which confirms the Service Gap Model theory applied in the research. These were the lack of personnels and windows to transact due to slow processing resulting to a long queue of students during the enrollment period. As a result, service is a factor to a successful management in the corporate world whether in the government institutions or business industrial institutions. Eventually, these imply the need to deliver a more systematic and easy transaction in the agency.

Keywords: *text analytics, sentiments, pragmatic, exploratory data analysis, qualitative research, phenomenology research design, social science, Philippines*

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1. Introduction

Campus life is one of the most exciting experience of a student. Every student and graduates have a tale to narrate about their school. Among those were the school services rendered by their respective universities or colleges. Merriam-Webster (n.d.) defined service as a contribution to the welfare of others. This definition seeks a serious commitment to its stakeholders and the community. Processes that can be observed in a university were involved by different offices such as the registrar, accounting, cashier, medical and dental, library, and the management information system (MIS). These were just the typical offices that serve the university students and the stakeholders. MIS in an organization can be compared to that of a heart of a human body [31]. It plays a very important role as it controls the flow of the blood to the different organs in the body to keep it going [26]. The same in the organization, MIS is the center flow of operations in an organization. This office keeps all other offices going in the digital age. The implementation and utilization of information technology in educational management have rapidly increased due to its advantages in terms of efficiency and effectiveness of operations in the university [33]. The MIS professional plays a key part in defining the essentials of an organization's information systems and is active in their specification, purpose, and execution. As a consequence, such professionals require a sound understanding of organizational principles and exercises so that they can function as an effective bridge between the technological and management communities within an organization (Western Washington University, nd). Among the roles of the MIS were the enrollment operations of the university. During enrollment, the MIS was tasked to secure complete operations used by the university like Student Information Systems that involves Accounting, Cashiering, Scheduling, Grading, Assessing or Student Advising, and other related activities. Aside from this operation and maintenance, the office is also tasked to perform printing of student official entrance slip, dropping and changing subjects, and other technical work. Because of gargantuan job responsibilities of the office, it is imperative to look into the lived experiences of the students in relation to the quality services given by this office to the students. The quality services rendered to its clientele give a massive impact to the likelihood and appreciation of the stakeholders towards the institution. Anent to this, this study expect to understand the lived experiences of the participants.

2. Review of Related Literature

The succeeding literature present the previous work related to the trends, services, and satisfactions in relation to the duties and responsibilities of the MIS. These literature clarify the gaps that this study would like to address. However, most of the literatures presented here were not the most current information for the researchers were not able to find a repository that would present the

needed information for this study. In the second segment of literature where the information related to sentiment analysis and the tools needed to perform data mining in an unstructured text corpus.

2.1. Related Literature of Previous Work

In a study conducted, it was reported that the researchers were unable to find pertinent studies indicating whether or not an organization conducted or measured the user satisfaction and how they were doing it [7]. This claim only indicates that most organizations are actually not so open in understanding the feedback of their clients. If ever they are doing it, they are not so open to the public on how they were able to overcome some issues. Another study revealed that there is no precise measurement of user satisfaction and Information System effectiveness and the criteria for effectiveness may vary from organization to organization [39]. On the other hand, some organizations tend to outsource some of their services for financial matters and convenience of the management. In a descriptive study conducted using the variables such as demographic profiles, size, industry and information intensity it was found out that systems operations remain predominant functions and other functions performed by the external service provider [11]. The degree of end-user satisfaction with information technology (IT) has widely been taken as an indicator of IT success. Among suggested indicators of IS success were perceived usefulness, ease of use, user expectations, user experience, user skills, user involvement in system development, organizational support, perceived attitude of top management toward the project and user attitude toward information systems (IS) in widely divergent settings [19]. These indicators have shown a profound relationship of user involvement in systems development but lack on the services of MIS itself.

What is lacking in this literature are the real experiences of the clients about their impressions of the services provided by the MIS of the same system. Most of their cognitive operations and analysis require a descriptive type of a research. How about the actual lived experiences?

2.2. Related Literature on Sentiment and Text Analysis

2.2.1. Text Mining Technique

The term text mining is defined as the analysis of data in a natural language text also call as text analytics often used to derive a high quality of information from text [30]. Text mining can help to derive important information from a gargantuan of an unstructured corpus of qualitative data which it has to undergo with proper filtering of text using data mining algorithms. With a proper use of text analytics, such as an iterative approach to text filtering, a mined text data can provide insights into content-specific values such as sentiments, emotions, intensity and relevance. Moreover, text filtering means an information seeking process in which documents are selected from a dynamic text stream [40]. Typical applications for text mining were analyzing open-ended survey responses, automatic processing of messages and emails, analyzing warranty or insurance claims, diagnostic interviews, and investigating competitors by crawling their websites [37].

2.2.2. The Sentiment Analysis

Sentiment analysis or opinion mining is defined by Pang and Lee [27] as the automatic analysis of evaluative text and tracking of the predictive judgments. Furthermore, sentiment analyzer was utilized in extracting sentiments in a given topic using natural language processing techniques.

2.3. The Exploratory Data Analysis Softwares and Generators

2.3.1. R-Studio/ Programming

R is a language and environment for statistical computing and graphics. It is a GNU project which is similar to the S language and environment which was developed at Bell Laboratories (formerly AT&T, now Lucent Technologies) by John Chambers and colleagues. R can be considered as a different implementation of S. There are some important differences, but much code written for S runs unaltered under R [20]. R provides a wide variety of statistical (linear and nonlinear modeling, classical statistical tests, time-series analysis, classification, clustering, etc.) and graphical techniques, and is highly extensible. The S language is often the vehicle of choice for research in statistical methodology, and R provides an Open Source route to participation in that activity [3]. One of R's strengths is the ease with which well-designed publication-quality plots can be produced, including mathematical symbols and formulae where needed. Great care has been taken over the defaults for the minor design choices in graphics, but the user retains full control (R-programming, nd).

This software was used to generate the word cloud, associations of word frequencies, and frequency graph. Utilizing through programming has been the most important role of this software since as far as the researcher's information is concerned, this is the only software that is accessible and easy to learn in order to generate those needs in a semantic analysis aside from the usual identification of qualitative responses into a positive and negative response. Programming is a systematic approach to the logic formulation of interpretation on how the processes were developed according to its expected output. Algorithms plays a vital role in establishing this logical command in order the computer will follow and generate new information from a huge of information.

2.3.2. Word Tree

A word tree is essentially an interactive form of the keyword-in-context (KWIC) technique. It builds on KWIC in three ways. First, it has a visual design that makes it easy to spot repetition in the contextual words that follow a phrase. Second, the design makes obvious the natural tree structure of the context. Third, it affords easy ways to explore the context further [41]. Word trees show a pre-selected word(s) and how it is connected to other words in text-based data through a visual branching structure. Unlike word clouds, word trees visually display the connection of words in the dataset, providing some context for their use. Words that show up more frequently

in combination with the pre-selected word(s) are displayed in larger font size.

2.3.3. Word Cloud

Word clouds or tag clouds are graphical representations of word frequency that give greater prominence to words that appear more frequently in a source text. The larger the word in the visual the more common the word was in the document(s). This type of visualization can assist evaluators with exploratory textual analysis by identifying words that frequently appear in a set of interviews, documents, or other text. It can also be used for communicating the most salient points or themes in the reporting stage (Better Evaluation, 2015).

2.3.4. Word Frequency and Graph

Word frequency also known as Term frequency analysis was first used in marketing. It is a simple yet powerful way to get the insights on the trends across multiple properties. It records the metadata associated with it including the sentiments of the participants in order to learn the trend of words used in the sentiments [22]. This method was used in a study conducted by Quin He [12] entitled Knowledge Discovery Through Co-Word Analysis. Co-word analysis is a content analysis technique that uses patterns of co-occurrence of pairs of items (i.e., words or noun phrases) in a corpus of texts to identify the relationships between ideas within the subject areas presented in these texts. Indexes based on the co-occurrence frequency of items, such as an inclusion index and a proximity index, are used to measure the strength of relationships between items. Based on these indexes, items are clustered into groups and displayed in network maps. A word graph is a directed, acyclic, weighted, labeled graph with distinct root and end vertices. The natural topological ordering for a word graph is given by time stamps of vertices. Acyclicity and topological ordering are consequences of the fact that words are uttered linearly in time [2].

2.3.5. Word Association

The concepts of the word or text association rule was based on Concept Algebra (CA), in which is said that, CA-based text representation method which can be auto-constructed and used in ordinary texts' includes more semantic information compared to Keyword methods. This method provides a new way of thinking of more accurately mining meaningful association rules [44]. Furthermore, Ye, Xiong, and Xu explore the concepts of association rules mining based on CA represented text. The results are can be used as the keyword in finding pertinent information from an unstructured text data sets. Moreover, associations between words in textual documents are searched, and those that satisfy user-specified threshold (support and confidence) are retained [38].

2.3.6. Phrase-Net

The size of the text represents the word frequency within the text. The connections between words are usually displayed as arrows where their directionality and width communicate the flow and strength of connected words [13].

3. Theoretical Framework

This research is anchored in the theory of GAPs Model of Service Quality developed by Parasuraman, Zeithaml, and Berry [28] and described by Zeithaml and Bitner (2003).

"*The quality of the service is the degree of conformance of all the relevant features and characteristics of service to all the aspects of the consumers' needs limited by the price and delivery s/he will accept.*"

This model has five (5) distinct gaps. The first gap in service quality occurs when management fails to accurately identify customer expectations called as **knowledge gap**. The second gap is referred to as the **design gap**. It is measured by how well the service design specifications match up to management's perception of customer expectations. Gap 3 represents the variation in service design and service delivery. Known as the **performance gap**, its extent is a function of many variables involved in the provision of service. The fourth gap is called the **communications gap**. It is the difference between what is promised to customers, either explicitly or implicitly, and what is being delivered. Gap 5 is the total accumulation of variation in the Gaps 1 through 4 and represents the difference between expectations and perceived service. Furthermore, consumers evaluate perceived service along five quality dimensions.

This is supported by the Dimension service quality [28]. Service quality dimensions refer to the psychological dimensions that form the basis of a customer's perceived quality of a service. The five specific dimensions of service quality exist and apply regardless of the service industry: reliability, responsiveness, assurance, empathy, and tangibles. Reliability is defined as the ability to perform the promised service dependably and accurately. In other words, it means doing what you say you will do. Customers have consistently stated that a company's ability to deliver promises is the most vital factor in providing service quality. Responsiveness is the willingness to help customers and to provide prompt service. Customers judge a company's responsiveness by assessing the amount of time it takes and the attentiveness that is offered in response to their requests, questions, complaints, and problems. Assurance is defined as employees' knowledge and courtesy and the ability of the firm and its employees to inspire trust and confidence. Empathy is defined as the caring, individualized attention the firm provides its customers. Customers perceive the level of a company's empathy by the degree of personalized service offered. Customers want to be known on an individual basis and feel that the company understands and addresses their individual needs. Tangibles are defined as the appearance of physical facilities, equipment, personnel and communication materials.

The GAP model provides an integrated framework for managing service quality and customer-driven service innovation [5]. This model will be the basis of the service quality rendered by the university specifically the office being studied in five areas in the GAP Model and the five dimensions of service quality.

4. Research Problem

This research explored the lived experiences of the university students transacting the Management Information

System (MIS) after enrollment period for the 2nd semester of the school year 2015. Specifically, this research seeks answers to the following questions:

1. What are the most frequent words mentioned by the respondents? And what are the philosophical assumptions of these words?
2. How do these words associate philosophically?
3. What are the views of the respondents on the services rendered by the office?

5. Research Design and Methods

5.1. Research Design

The phenomenology research design was utilized in this research. According to John Creswell (2013), phenomenological research lets the researcher identifies the "essence" of human experiences concerning a phenomenon as described by the participants in the study in order to understand their lived experiences. Finally, this research employed sentiment analytics specifically the exploratory design data analysis. Creswell defined in the same article that exploratory design is understanding and analyzing unstructured data using philosophical assumptions.

5.2. Research Methods

This research employed *Text Mining* technique of data mining processes, combining techniques from machine learning, natural language processing, information retrieval, and knowledge management [9] specifically in data exploration of a qualitative information or datasets using *Exploratory Data Analysis (EDA).* Moreover, EDA was utilized in this research in order to understand the hidden information from a qualitative data sets. EDA is the set of steps that qualitative researchers follow in exploring a new area of social or psychological life that they do by collecting open-ended data from which to generate new concepts and generalizations about that area [36]. Participants of this research were 173 first year BSIT student of the university. They were chosen using purposive sampling one (1) week after the enrollment of 2nd semester of School Year 2015. This research utilized the Google Form in submitting their narratives or sentiments in relation to its experiences during transacting the office. The data then extracted using MS Excel and transformed into a text file using NotePad++. In continuation, this research employed software in exploring the data sets to generate reports for analysis.

5.3. Research Reflexivity

Exploratory Data Analysis is commonly used to explore a huge of qualitative datasets either taken from the cloud like social networks, blogs, websites and the like. The researcher's intentions of performing this type of technique and paradigm is to dig deeper, understand, and discover new knowledge from a mass of qualitative data using different kinds of tools or software in order to perform the task.

5.4. Ethical Issues

This research reserved to exploit the name of the university and the office in order to avoid misconception of the impressions of the readers and the university's integrity and future legal predicaments. The names of the participants who have the courage to express their personal experience were also hidden as part of the ethical consideration in research.

6. Results and Discussions

Aesthetic geometric presentation of words that appears in the responses of the respondents was shown in figure 1. This word cloud was generated through R-programming, wherein it shows words that were big and small. This indicates that the more the word is frequently used by the respondents in their response shows a bigger presentation of the word. The main purpose of the word cloud is to depict the representative keywords [8] that can be used to understand the valence of the words and to understand the emotions of the respondents relative to the services rendered by the MIS.

In support of the presentation of the word cloud in Figure 1, Table 1 illustrates the word frequency and Figure 2 as the graphical presentation of the most frequent words in the text data sets. Valence is defined in psychology as the measurement of emotions and categorized as positive valence (attractiveness) and negative valence (aversiveness) [24]. It was very evident that "good", "service", and "office" were the top most frequent words mentioned in the text data sets. This is to understand the etymological structure of the term in the text data set [4]. Furthermore, word frequency is one of the most important variables in research on word processing and memory [6]. It shows the measurement of the word that is frequently mentioned by the respondents.

Figure 1. MIS Word Cloud

Table 1. Word Frequency of MIS Corpus Responses

Word	Frequency
Good	136
Service	96
Office	67
Transact	65
Satisfied	64
Student	62
Process	53
Time	53
Fast	45
Personnel	44

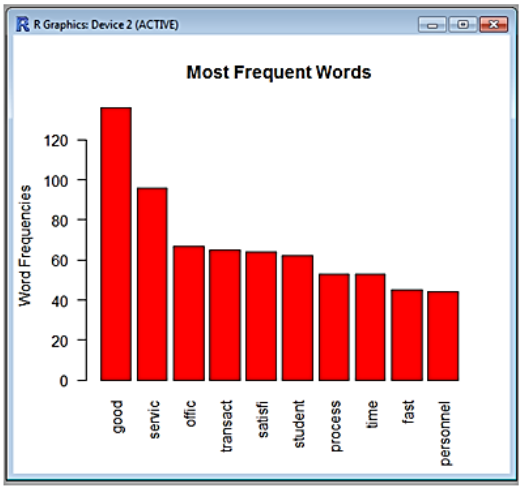

Figure 2. Graphical Presentation of the Most Frequent Words

Word valence has no meaning if the word has no associations with other words that were mentioned in the text data sets. In Figure 3, it illustrates and determine the different associations of a word that are most frequently mentioned by the respondents. In a study, word associations were used to analyze the differences in the use of content words such as nouns, adjectives, verbs and adverbs which evidently provide the meaning of the responses of the respondents [10]. Finally, word fragment norms are very useful in evaluating the predictive value of free association probabilities [23]. In this figure, the term *good*, *service*, and *office* show no associations made despite being frequently used by the respondents and these terms show no valence value associated with other words.

Based on the researcher's observation, the combinations of these words were used to associate each other with *good service*, *good office*, *good service in the office*, *the service of the office is/are good* and the likes were found in the text data set and this is called free associations in the study. The connections of the words were shown in Figure 4. The word sentiments were connected according to their valence and arousal and based on the appearance and frequencies of the words. The term valence is the intrinsic attractiveness or aversiveness of an emotion [21]. This is implied by a cognitive-psychologist that whether or not people would want to feel something. While arousal refers to the physiological and psychological state of being reactive to stimuli [21]. This case, the most frequent words like "good" described by the connected words such as *office*, *service*, *process*, *approachable*, *processing*, and *rendered.* Followed by other words connected to it up to the last connections that give associations and meaning to the text. Based on the given connections and associations, it is very evident that the office provides and render services to its client. The personnel in-charge were also identified to be approachable in processing request of the clients. Furthermore, in a study entitled "The relation between valence and arousal in subjective experience", it was reported that there is a consistent relation of arousal as a function of valence, there is large variation at the individual level, and valence and arousal can in principle show a variety of relations depending on the circumstances and the person itself. Moreover, the meaningfulness of the observed individual differences is supported by their personality and cultural correlates [17].

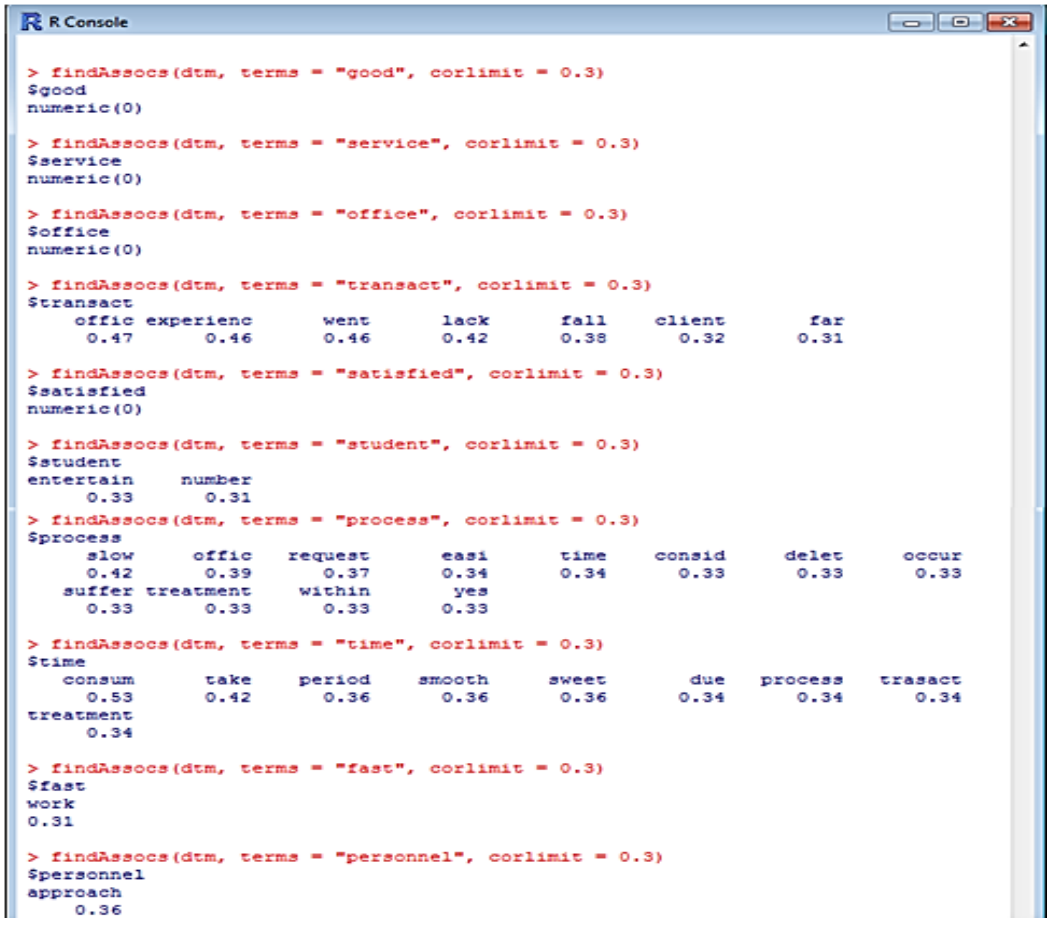

Figure 3. Associations of the Frequent Words

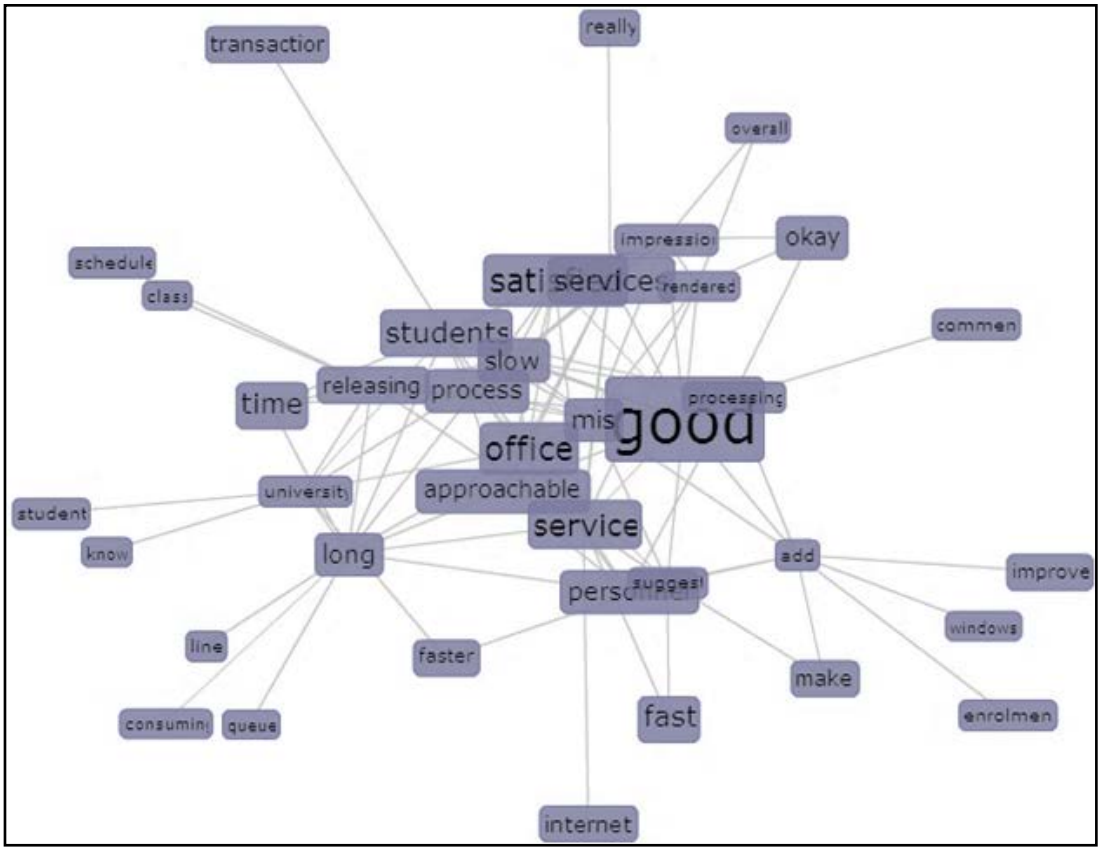

Figure 4. Phrase Net of Word Sentiments

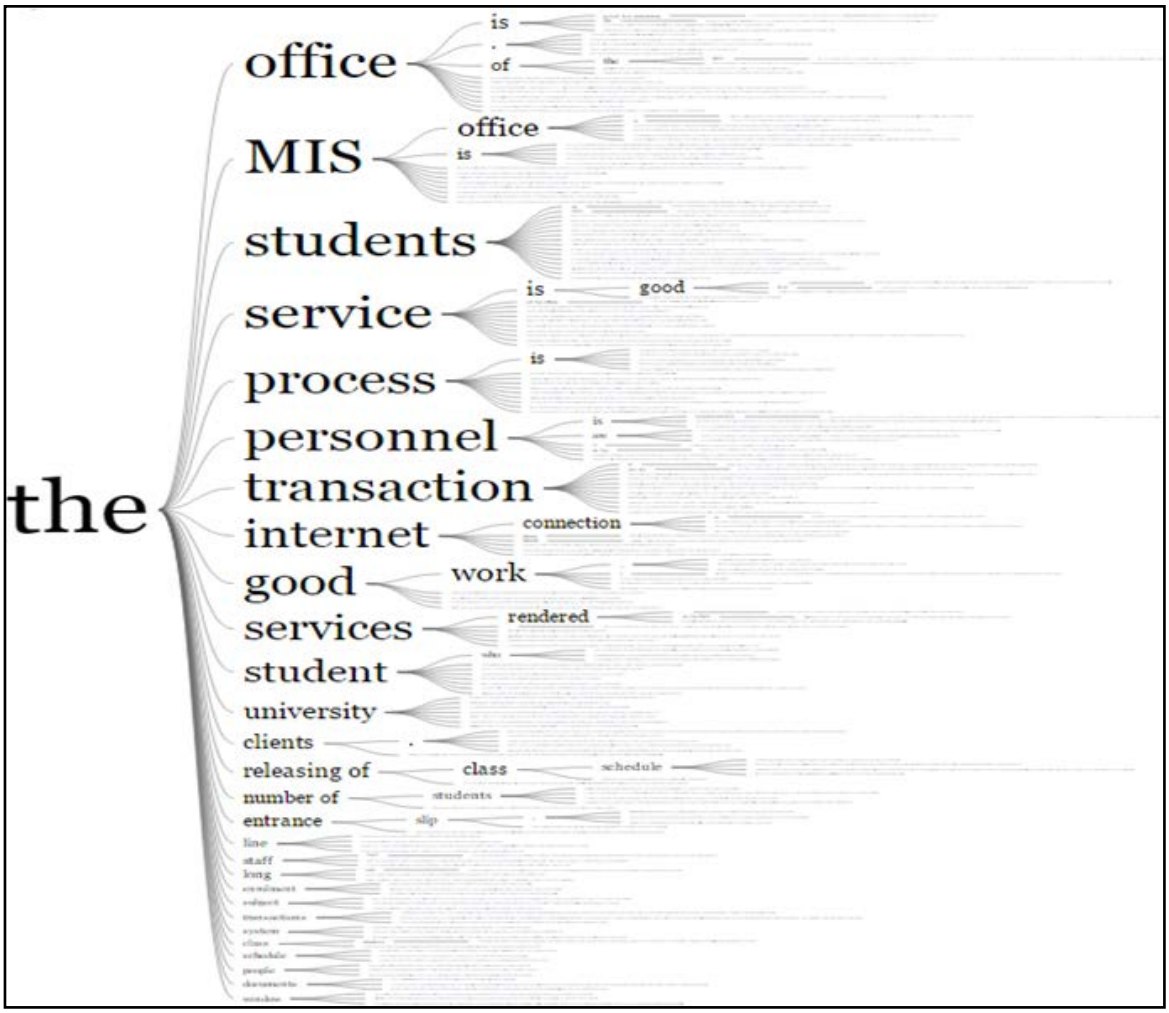

Figure 5. MIS Word Tree

Figure 5 shows the complete word tree generated from the text data set of responses of the respondents. Word tree is a new way of information visualization-retrieval technique aimed at text document [41]. It is also a graphical representation of the traditional *keyword-in-context* (KWIC) method, which is another way of text analysis based on the groupings, similarity, and associations. KWIC is a document search method that creates indexes of document text (Thesaurus, ND). In this context, the word explores the bodies of text and find the deeper meaning of the sentiments of the respondents. Furthermore, word tree utilizes the so-called Latent Semantic Analysis to discover the most expressive visual words [45]. Latent Semantic Analysis as cited by Landauer, Foltz, and Laham [18] from the work of Landuer & Damais in 1997, it is a theory and method for extracting and representing the contextual-usage meaning of words by statistical computations applied to a large corpus of text. They also reported that it accurately estimates passage coherence, the learnability of passages by individual students, and the quality and quantity of knowledge contained in an essay. In this research, the researchers attempt to use this method with the help of an application developed by Jason Davies in order to generate the word tree in order to explore the context of the responses qualitatively. Below were the exploratory data results and analysis of Figure 5 based on the three most frequent words mentioned by the respondents.

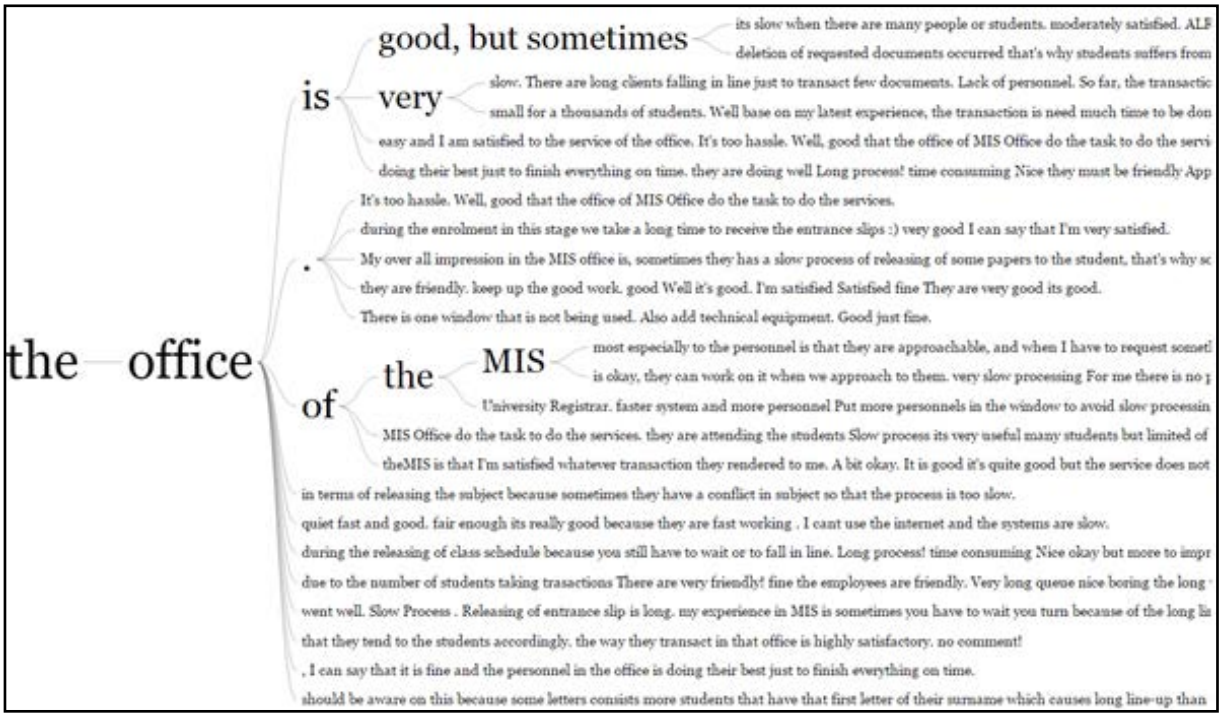

Figure 5.1. MIS Word Tree – Office

Figure 5.1.1. MIS Word Tree – Office

To understand the message of the responses of the respondents, the researchers perform Text Mining using Word tree processes as suggested by Hofmann and Chisholm [14] in their study entitled Text Mining and Visualization: Case Studies Using Open-Source Tools. They said that to investigate further a term you must consider the most frequent word in the text corpus and try zooming it by clicking the branches or the leaves of the tree. Then understand the message of the text by identifying it as positive or negative valence. In this case, the researchers show the generated graphical representation of the word tree according to its branches/leaves as shown in the following figures such as Figure 5.1.1, Figure 5.1.2, and Figure 5.1.3.

Figure 5.1.1 reveals the specific responses using the term "*Office*" as its root of the tree with a starting line of

"the office is good, but sometimes" and is associated with the most common and connected sentiments of the respondents on the phrase generated by the word tree by automatically highlighting the specific sentences in the text data sets where the term *"Office"* is frequently mentioned. Based on the observation and understanding of the researchers, it is very evident that responses from *1 to 4* shows positive valence and experiences. However, if we will complete the sentence using the terms from the selected root, it could be like:

6.1. Student Feedback on Satisfaction.

1. The office is good, but sometimes it is moderately satisfied.
2. The office is good, but sometimes it is already satisfied.
3. The office is good, but sometimes they entertain and handle the clients well.
4. The office is good, but sometimes it is just satisfied.
5. The office is good, but sometimes it's slow when there are many people or students.
6. The office is good, but sometimes deletion of requested documents occurred that's why students suffer from a slow process of releasing the requested documents.

These shows nearly to negative valence and experiences of the respondents. Furthermore, responses from *5 to 6* shows negative valence and experiences of the respondents based on the understanding of the researchers. In relation to the theory used in this research, it confirms one of the gaps identified in the theory of GAPs Model of Service Quality [28] which was the *performance gap*. It is clear that the term, performance gap represents the variation in service design and service delivery It is a function of many variables involved in the provision of service. Which the quality service to be rendered by the office must be met as expected by the respondents.

Another response revealed in Figure 5.1.2 still using the term *"Office"*. In this case, the root phrase is *"the office is very"*. The generated terms and sentences associated with the root phrase were shown below.

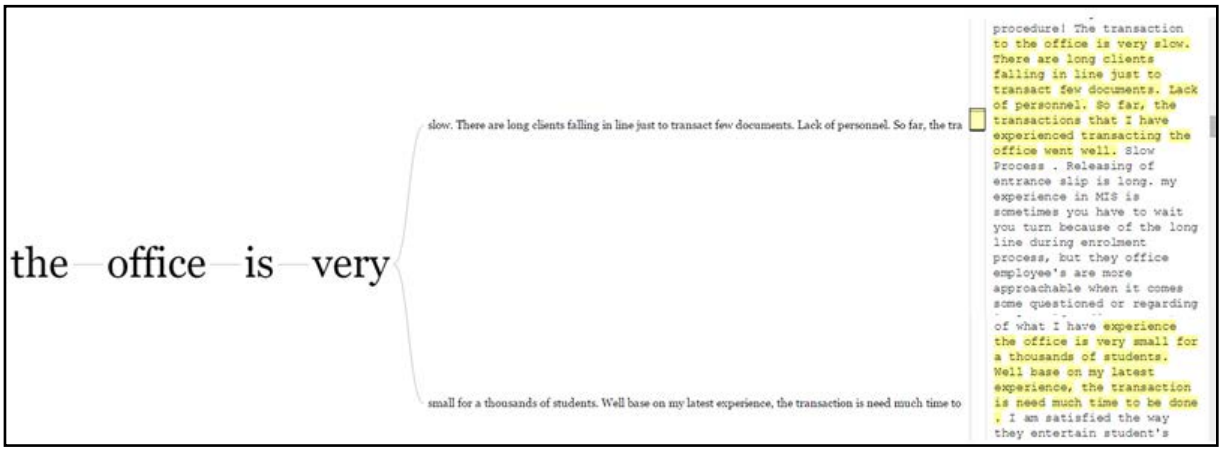

Figure 5.1.2. MIS Word Tree – Office

6.2. Student Experiences Transacting the Office

1. The transaction to the office is very slow.
2. There is a long queue of clients falling in-line just to transact few documents.
3. Lack of personnel.
4. So far, the transactions that I have experienced transacting the office went well.
5. As of what I have experienced the office is very small for thousands of students.
6. Well base on my latest experience, the transaction needs much time to be done.

Based on the analysis of the researchers, it reveals that it shows negative valence, impression, and experiences of the respondents when transacting the office. Only response *4* has shown positive valence, impression, and experience of a respondent. This finding also confirms the theory and the performance gap identified and mentioned above.

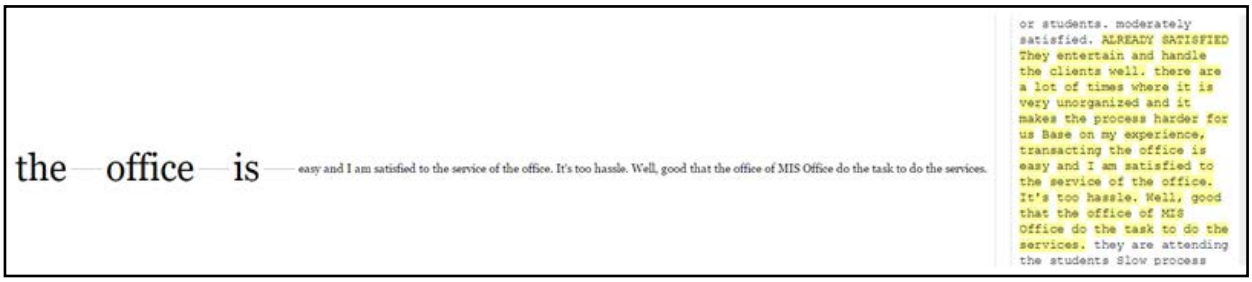

Figure 5.1.3. MIS Word Tree – Office

Figure 5.1.3 illustrates another word tree using the term *"office"* as its root in the tree using the phrase *"the office is"*. Below revealed the responses that are associated with the root in the text data set. The responses show a negative

valence, impressions, and experiences of the respondents. Moreover, is also confirming the Gap Model theory of knowledge and performance gap. This clearly states that the management fails to accurately identify customer expectations and the service design and service delivery to its clientele.

6.3. Student Experiences Transacting the Office (Cont.):

1. There are a lot of times where it is very unorganized and it makes the process harder for us.
2. Base on my experience, transacting the office is easy and I am satisfied with the service of the office.
3. It is too hassle.

To confirm the above sentiments of the respondents on the term *"office"*, the researchers also would like to find out sentence associations on *"students"*. Figure 6 shows the sentence associations on the term *"students"*. It reveals below that a negative valence, impression, and experience have shown and a suggestion to improve the delivery of the service of the personnel. These sentiments confirm the Gap Model theory on customer expectations called as **knowledge gap**, service delivery also called **performance gap**, and the **communication gap** which differentiates between what is promised to customers, either explicitly or implicitly, and what is being delivered.

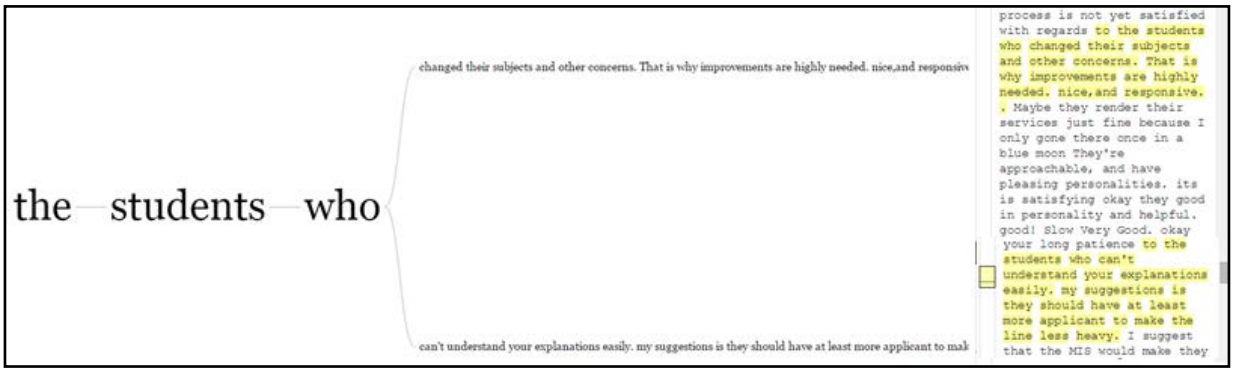

Figure 6. MIS Word Tree – Student

6.4. Student Suggestions/Comments

1. The process is not yet satisfied with regards to the students who changed their subjects and other concerns. That is why improvements are highly needed. Nice, and responsive.
2. Please maintain your long patience with the students who can't understand your explanations easily.

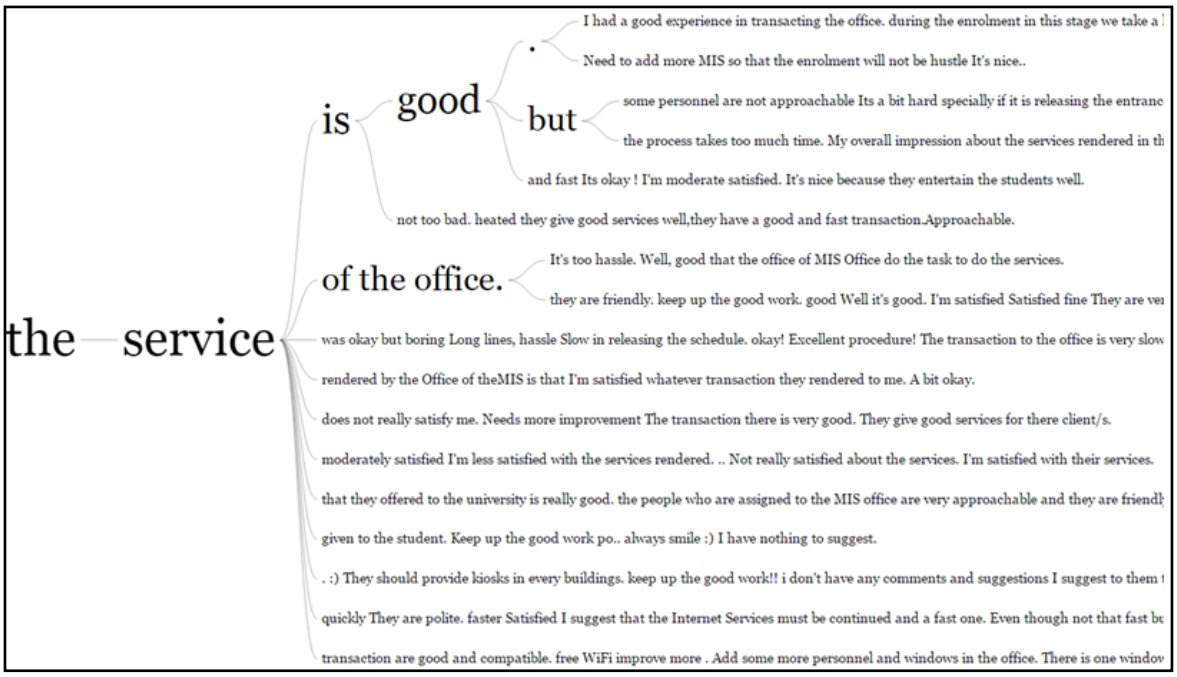

Figure 7. MIS Word Tree – Service

Another term that is very vital in understanding the sentiments of the respondents was the services offered and rendered by the office. Anent to this, the term *"service"* was used as its root in the word tree in order to find out the sentence associations as sentiments. In order to further understand the meaning of the responses, the word tree was zoomed-in to its branches/leaves.

The sentiments of the respondents on the services were shown in Figure 7.1, it manifest that the respondents were not really satisfied in some areas. It shows that it has a negative valence, impression, and experiences of the respondents when transacting the office during the enrollment.

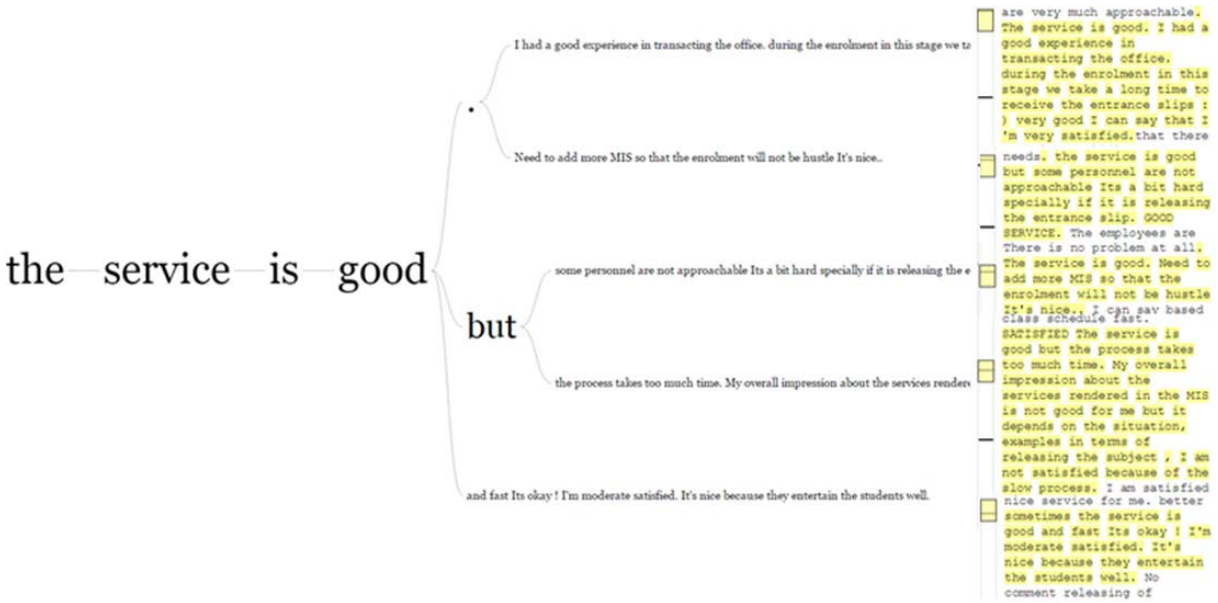

Figure 7.1. MIS Word Tree – Service

6.5. Impressions of the Students towards the Office and the Personnel

1. During the enrollment in this stage, we take a long time to receive the entrance slips.
2. The service is good, but some personnel is not approachable.
3. It's a bit hard, especially if it is releasing the entrance slip.
4. Need to add more MIS so that the enrollment will not be hustled It's nice.
5. The service is good, but the process takes too much time.
6. My overall impression of the services rendered in the MIS is not good for me, but it depends on the situation, examples in terms of releasing the subject, I am not satisfied because of the slow process.

In a post at ResearchGate by Ahmed Omer [25] with a question "What is the roles of MIS in the fields of Education". A response from the question says:

MIS can help us in many ways in the field of education. It can help us store student related information which enhances our decision-making for taking routine decisions related to students' development and progress in the class, and further helps in planning their placement activity better, and also making its footprint on managing alumni in the long run, and much more. MIS also helps in managing our human resources, our experts, and overall knowledge management in the organization. There are many other areas in education that could be handled better with the help of MIS, like Research and consultancy work, infrastructure, corporate liaison, conferences, journals, etc. by Neeraj Sharma.

From this point of view, the MIS is obligated to conduct and assess the ICT processes which involved many offices especially during the enrollment period of the university. The Gap Model specifies the different kinds of gaps that the university must look into considerations and be its top priority. These were a knowledge gap, design gap, performance gap, communication gap, and the combination of the four (4) gaps which entails to cross check the implementation of the solutions of the different gaps.

7. Discussion

The pragmatic experiences of the students transacting the MIS Office have revealed a profound explanation about the connection between the lived experiences towards its personal impressions and suggestions on how the office and its personnel treat its clientele. In a study about the organizational life cycle, it was said that stakeholders have the potential to satisfy critical organizational needs, will be more important than others [15]. As such, it is empirical to study, understand, and listen to the comments, suggestions, and lived experiences of the students to further develop policies and improvement of the services rendered to them. In a stakeholders 'theory and practice, it is said that it is important to explore the impact of stakeholder dynamics; acknowledging the multiple and interdependent interactions between stakeholders and paying attention to managing a specific set of stakeholders will have a powerful effect on achieving strategic goals and long-term viability [1].

8. Conclusion and Recommendation

It is observed based on the findings of the study that the office has to improve its services by revisiting the processes during the enrollment period. Implementing a new systematic approach by employing new paradigm in information handling and processing in order to serve the students efficiently and effectively. Moreover, the processes that were performed in the research, specifically conducting text mining using sentiment analysis or text analytics were very effective in identifying the deeper meaning of the sentiments rather than generalizing it. This

process can also help researchers to fast track in identifying the themes in research.

Finally, as suggested and recommended by the participants, the following were the most identified and perhaps the most immediate needs of the office and the university as well:

1. To avoid long queue during enrollment, the university should utilize online scheduling and printing of entrance slip to be verified upon payment by the Cashier.
2. Adding and changing of subjects should also be done online, but must provide a specific schedule to do such action.
3. Provide more personnel and windows in the office to avoid overcrowded of the student waiting if number one (1) and two (2) is not yet to be implemented or will not be implemented.
4. Personnel should undergo ethical behavior training in dealing with customers.

References

[1] Ackermann, F., & Eden, C. (2011). Strategic management of stakeholders: theory and practice. *Long range planning, 44*(3), 179-196.

[2] Amtrup, J. W., Heine, H., & Jost, U. (2013). What's in a word graph evaluation and enhancement of word lattices.

[3] Antoch, J. (2008). Environment for statistical computing. *Computer Science Review, 2*(2), 113-122.

[4] Baayen, R. H. (2001). *Word frequency distributions* (Vol. 18). Springer Science & Business Media.

[5] Bitner, M. J., Zeithaml, V. A., & Gremler, D. D. (2010). Technology's impact on the gaps model of service quality. *In Handbook of service science* (pp. 197-218). Springer US.

[6] Brysbaert, M., & New, B. (2009). Moving beyond Kučera and Francis: A critical evaluation of current word frequency norms and the introduction of a new and improved word frequency measure for American English. *Behavior research methods, 41*(4), 977-990.

[7] Conrath, D. W., & Mignen, O. P. (1990). What is being done to measure user satisfaction with EDP/MIS. *Information & Management, 19*(1), 7-19.

[8] Cui, W., Wu, Y., Liu, S., Wei, F., Zhou, M. X., & Qu, H. (2010, March). Context preserving dynamic word cloud visualization. *In Pacific Visualization Symposium (PacificVis), 2010 IEEE* (pp. 121-128). IEEE.

[9] Feldman, R., & Sanger, J. (2007). *The text mining handbook: advanced approaches in analyzing unstructured data.* Cambridge University Press.

[10] Glanzer, M. (1962). Grammatical category: A rote learning and word association analysis. *Journal of verbal learning and verbal behavior, 1*(1), 31-41.

[11] Grover, V., Cheon, M. J., & Teng, J. T. (1994). A descriptive study on the outsourcing of information systems functions. *Information & Management, 27*(1), 33-44.

[12] He, Q. (1999). Knowledge Discovery Through Co-Word Analysis. *Library trends, 48*(1), 133-59.

[13] Henderson, S. (2015). Phrase Net. Retrieved from http://betterevaluation.org/taxonomy/term/573

[14] Hofmann, M., & Chisholm, A. (2015). Text Mining and Visualization: Case Studies Using Open-Source Tools. CRC Press. Business & Economics.

[15] Jawahar, I. M., & McLaughlin, G. L. (2001). Toward a descriptive stakeholder theory: An organizational life cycle approach. *Academy of management review, 26*(3), 397-414.

[16] Keyword-In-Context. Thesaurus. Retrieved from http://dictionary.reference.com/browse/keyword-in-context?s=t.

[17] Kuppens, P., Tuerlinckx, F., Russell, J. A., & Barrett, L. F. (2013). The relation between valence and arousal in subjective experience. *Psychological Bulletin, 139*(4), 917.

[18] Landauer, T. K., Foltz, P. W., & Laham, D. (1998). An introduction to latent semantic analysis. *Discourse processes, 25*(2-3), 259-284.

[19] Mahmood, M. A., Burn, J. M., Gemoets, L. A., & Jacquez, C. (2000). Variables affecting information technology end-user satisfaction: a meta-analysis of the empirical literature. *International Journal of Human-Computer Studies, 52*(4), 751-771.

[20] Mineo, A. M., & Pontillo, A. (2006). Using R via PHP for Teaching Purposes: R-php. *Journal of Statistical Software, 17*(4), 1-20.

[21] Monitoring Emotions. (2013). Monitoring Emotions-Valence VS Arousal. The Thinking Zygote. Retrieved from http://www.thinkingzygote.com/2013/06/monitoring-emotions-valence-vs-arousal.html.

[22] Murphy, C. (2013). Term Frequency Analysis. Retrieved from https://www.revinate.com/blog/2013/08/tfa/

[23] Nelson, D. L., McEvoy, C. L., & Schreiber, T. A. (2004). The University of South Florida free association, rhyme, and word fragment norms. *Behavior Research Methods, Instruments, & Computers, 36*(3), 402-407.

[24] Oatley, K., Keltner, D., & Jenkins, J. M. (2006). *Understanding emotions*. Blackwell publishing.

[25] Omer, A. (2012). What are the roles of MIS in the fields of Education? Researchgate. Retrieve from https://www.researchgate.net/post/What_are_the_roles_of_MIS_in_the_fields_of_education.

[26] Open Learning World. (2011). Role of the Management Information System. Retrieved from http://www.openlearningworld.com/books/Fundamentals%20of%20MIS/Introduction%20to%20Management%20Information%20Systems/Role%20of%20the%20Management%20information%20system.html.

[27] Pang, B., & Lee, L. (2008). Opinion mining and sentiment analysis.*Foundations and trends in information retrieval, 2*(1-2), 1-135.

[28] Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. *The Journal of Marketing*, 41-50.

[29] R-programming. (nd). What is R? Retrieved from https://www.r-project.org/about.html

[30] Rouse, M. (2013). Text mining (text analytics) definition. TechTarget. Retrieved from http://searchbusinessanalytics.techtarget.com/definition/text-mining.

[31] Sakthivel, RS. (2014). Role Impact and Importance of MIS. Retrieved from https://www.linkedin.com/pulse/20140901121616-270946654-role-impact-and-importance-of-mis.

[32] Service [Def. 1]. (n.d.). *Merriam-Webster Online*. In Merriam-Webster. Retrieved 11/25/2015, from http://www.merriam-webster.com/dictionary/service.

[33] Shah, M. (2014). Impact of management information systems (MIS) on school administration: What the literature says. *Procedia-Social and Behavioral Sciences, 116*, 2799-2804.

[34] Sinclair, S. and G. Rockwell (2015). Cirrus. Voyant. Retrieved November 25, 2015 from http://voyant-tools.org/tool/Cirrus/.

[35] Sinclair, S. and G. Rockwell (2015). Collocate Clusters. Voyant. Retrieved 11/24/2015 from http://voyant-tools.org/tool/Links/.

[36] Stebbins, R. A. (2001). Exploratory research in the social sciences (Vol. 48). Sage.

[37] Text Mining. (2015). Text Mining. Statistics. Retreived from http://documents.software.dell.com/Statistics/Textbook/Text-Mining.

[38] Thaicharoen, S. (2009). *Text association mining with cross-sentence inference, structure-based document model and multi-relational text mining.* ProQuest.

[39] Thong, J. Y., & Yap, C. S. (1996). Information systems effectiveness: A user satisfaction approach. *Information Processing & Management, 32*(5), 601-610.

[40] Visa, A. (2001). Technology of text mining. *In Machine Learning and Data Mining in Pattern Recognition* (pp. 1-11). Springer Berlin Heidelberg.

[41] Wattenberg, M., & Viégas, F. B. (2008). The word tree, an interactive visual concordance. *Visualization and Computer Graphics, IEEE Transactions on, 14*(6), 1221-1228.

[42] Western Washington University. (nd). Management Information Systems Concentration. Retrieved from http://cbe.wwu.edu/dsci/management-information-systems.shtml.

[43] Word Cloud. (2015). Word Cloud. Retrieved from http://betterevaluation.org/evaluation-options/wordcloud.

[44] Ye, F., Xiong, J., & Xu, L. (2013). A Text Association Rules Mining Method Based on Concept Algebra. *In Green Computing and Communications (GreenCom), 2013 IEEE and Internet of Things (iThings/CPSCom), IEEE International Conference on and IEEE Cyber, Physical and Social Computing* (pp. 2153-2158). IEEE.

[45] Zhang, S., Huang, Q., Lu, Y., Wen, G., & Tian, Q. (2010). Building pair-wise visual word tree for efficent image re-ranking. *In Acoustics Speech and Signal Processing (ICASSP), 2010 IEEE International Conference on*(pp. 794-797). IEEE.