Documented Information Management Module for PUP Institutional Quality Management System Portal

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by

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ABSTRACT

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Manual transaction processes are still used when it comes to auditing in the offices of Polytechnic University of the Philippines. With a large number of employees and multiple offices, the manual process of creating, reviewing, approving, monitoring, and distributing documents takes up a considerable amount of time, reducing the available time for more critical tasks and negatively impacting overall productivity levels. Hence, a solution in the form of a Documented Information Management System (DIMS) based on the QMS ISO 9001:2015 and ISO 10013:2021 standards is proposed to automate the tasks of document tracking and monitoring. Furthermore, this study will focus on document control and management, which comprises the enrollment, distribution, revision, archiving, monitoring, and reporting of documents. The target population for the system are the process owners at the various branches and campuses of the Polytechnic University of the Philippines. The researchers plan to use the Slovin's formula to calculate the appropriate sample size for the study, which was computed to be a total of four (4) sample size. Lastly, the three measures of central tendency including the mean, and median, and mode will be used to interpret the data for this proposed research.

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CHAPTER 1

The Problem and Its Setting

Introduction

The world of education is constantly changing, with even great chances in the future. This is due to the fact that technological evaluation, infrastructure availability, and technology are all vital and beneficial to universities. Universities, being dynamic institutions, are supportive of adopting a new strategy in order to maintain a constant level of adaptability. Universities are expected to become more involved in societal issues and to collaborate with other institutions and commercial businesses to find a solution (Bibi and Dr. Aurangzeb, 2021). In response to these conditions, educational organizations are implementing and certifying their quality management systems (QMS) in accordance with the international standard ISO 9001:2015 requirements, as well as the numerous benefits it may bring to an organization. A Quality Management System (QMS) is defined by the American Society for Quality as a formalized system that documents processes, procedures, and responsibilities for achieving quality policies and objectives, while ISO 9001:2015, the international standard specifying requirements for quality management systems, is the most prominent approach to quality management systems. ISO 9001 is a set of rules that allow enterprises to manage their quality-related procedures consistently (Magana et al, 2020).

Quality education has become a demand and need that must be fulfilled by every institution (Firdaus et al., 2022), and effective application of QMS standards in universities is becoming a significant concern. The realization of these demands and needs must correspond to the accepted quality standards. In 2006, the President of the Philippines issued Executive Order No. 605, which institutionalized the structure, mechanism, and criteria for implementing the government Quality Management Program, as well as revising the purpose of Administrative Order No. 161 S 2006. The EO seeks to promote and improve public sector performance through the implementation of ISO 9001:2015 Quality Management Systems in all government agencies. Concerning this order, institutions including the educational institutions are encouraged to provide quality services to the community.

Universities and institutions generate and use a vast number of papers of various types, so producing, distributing, replicating, and preserving documents is a critical concern. In most organizations, a document is essential. It is used as proof in transactions and as a record of written contracts. It exists to guarantee certain functions and procedures, and it must be correctly implemented. These functions and processes include file tracking, transfer, and monitoring. It becomes a problem if the task is not appropriately managed. Most institutions and colleges execute these responsibilities manually or semi-automatically; nonetheless, there are several issues in practice due to the lack of an effective document management system. Because of these circumstances, institutions must create document management system applications based on QMS ISO 9001:2015 requirements. A Documented Information Management System (DIMS) is proposed to automate the tasks of document tracking and monitoring. A typical application of Documented Information Management in the corporate environment and as well as in the educational institutions is one that supports the ISO 9001:2015 standard. To be effective and sustainable, it must be applied while taking into account the organization's particular environment and culture.

Theoretical Framework

The documented information management process starts with the creation of the document, which involves accomplishing the Document Change Request Form (DCRF). The process owner is required to fill-up the DCRF and choose a specific action whether to Create, Revise, or Delete.

The document controller will review the completeness of both the document and the DCRF. If the document and DCRF is not marked as complete, it will be returned to the process owner for further action. Meanwhile, the complete documents shall be forwarded to the QMR for approval and signature.

For creation/enrollment, the Document Controller shall assign a Document Code for identification of Document. Once approved, the Document Controller and the Quality Management Representative (QMR) will provide and distribute a controlled copy of the document to the process owner attached with a digital signature. If the document needs to be revised, the old documents in the manual will be replaced by the revised documents submitted by the process owner. The new and updated manual will be uploaded to the designated repository. Lastly, if the process owner chooses deletion, the document will be deleted from the system module but will only be archived from the database.

Figure 1. Theoretical Framework

Conceptual Framework

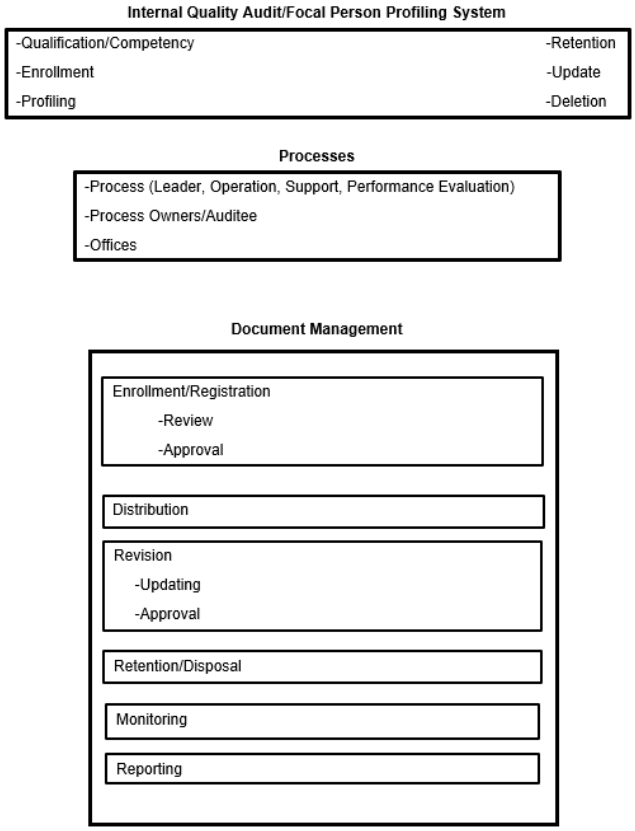

Figure 2. Conceptual Framework

Presented in the diagram is the conceptual framework for the documented information management module of the PUP QMS Portal. It includes the key components of the DMS and how they are related with each other. The first section of the framework which is the Focal person profiling shows the auditors or admins (authorized personnel) who will be managing the system as well as the functions that they can perform. The second part of the framework consists of the auditees which refers to the offices, staff, and faculty members who will serve as the process owner or users of the PUP QMS Portal. Lastly, the third section illustrates the main processes and features of the Documented Information Management module, which comprises enrollment, distribution, revision, disposal, monitoring, and reporting. Overall, this conceptual framework aims to ensure coherence and make the system comprehensible by illustrating the key concepts and relationships relevant to the current project.

Statement of the Problem

Generally, the objective of this study is to design and develop a Documented Information Management System that adheres to the QMS ISO 9001:2015 standards. Specifically, this research aims to answer the following research questions:

1. What are the specific challenges of the institution in managing documents, and how can these challenges be addressed through the implementation of a Documented Information Management System?

2. How can the proposed Documented Information Management System improve the efficiency and productivity of an organization?

3. What are the system requirements and key features that are necessary to meet the needs of PUP when it comes to a document management system?

Hypotheses

The hypotheses resulting from the literature review, and the theoretical argumentation are listed below according to their adherence to the specific objectives explained in the introduction of this paper.

Null hypothesis (H_0) = The development and adoption of ISO 9001:2015 QMS certification on the QMS Portal system has no significance on the organizational and auditing performance of the Polytechnic University of the Philippines sectors, departments, and offices.

Alternative hypothesis (H_a) = The development and adoption of ISO 9001:2015 QMS certification on the QMS system has a significant impact on the organizational and auditing performance of the Polytechnic University of the Philippines sectors, departments, and offices.

Scope and Limitation of the Study

The scope of the study will primarily focus on the analysis, design, implementation, and assessment of the proposed Documented Information Management System. Moreover, the system will revolve around document control and management, which includes the process of Enrollment, Distribution, Revision, Archiving, Monitoring, and Reporting of documents. This study will not include the features of the other modules of the PUP IQMSO Portal, namely Internal Quality Audit and Risk Management, and will only focus on the specific features and requirements of the documented information management module.

Significance of the Study

The primary goal of this research is to effectively establish a Documented Information Management System based on the ISO 9001:2015 and ISO 10013:2021 standards at the Polytechnic University of the Philippines. A DMS that allows for the management of all activities associated with educational and administrative processes, ensuring data integrity and accessibility, providing convenient networks for its distribution, effective storage, and information security. The study also benefits the following sectors:

The University. The university no longer requires a paper copy, which saves filing space and eliminates the risk of damage and theft.

The University's personnel. The documents can only be accessed by the appropriate individuals with the appropriate permissions, and there is a comprehensive audit history of who has viewed what and what they have done with the document every time the documents are accessed.

The students. Students will have quick and easy access to their information, which will enhance their entire university experience.

Future researchers. This study will act as a guide on how other universities can implement and/or improve their own DMS that supports the standards of ISO 9001:2015 QMS and improve efficiency and performance of their processes.

Other stakeholders. This comes from groups and organizations such as funders, businesses working in the non-government sector. The benefit of other stakeholders in DMS is that they can get involved in the decision-making process and influence the organization actions. Furthermore, a DMS facilitates internal collaboration that comes from the power to support collaboration between different stakeholders.

Definition of Terms

In this part of the research paper, the following words will help the readers and future researchers about the jargon or not familiar words to better understand the research. Definition of terms describe the words below:

1. Archiving – Preserving the deleted documents in a specific storage.
2. Departments – A workplace for employees.
3. Disposal - An action of deleting the documents from the system.
4. Distribution - An action of sharing something to the people.
5. Document - A piece of written paper or electronic file.
6. Document Controller – A person who maintains and organized different files for the organization.
7. Documented Information Management System - A system composed of electronic compiled documented information including manuals.
8. ISO 9001:2015 - Also known as Quality Management System. A standard qualification set by the ISO. It will help the organizations to improve customer satisfaction, reduce risks by having a consistency of quality products.
9. Manuals – Documented information that serves for the use of certain purposes in PUP.
10. Monitoring - observing and checking the progress or quality of something to a specific period of time.

11. Office – a space, department, or building where administrative and academic functions related to the operation of the institution are carried out.

12. One-time password (OTP) – To validate the Document Change Form, creation, deletion, and revision of they are the registered process owners.

13. Process Owners - the person in charge responsible for initiating a process. Implementing a productive and effective procedure within an organization.

14. Quality Management Representative – A consultant of in an organization, whether to approve or reject the type of action of the process owners.

15. Registration - The action of applying or enrolling a process.

16. Reports - Observation of something for decision making made by investigation.

17. Retention - The process of retaining or preserving documents or records for a specified period of time.

18. Revision - Editing a document to update or change.

19. Sectors – An area or branch in the PUP organization.

CHAPTER II

Review of Related Literature and Studies

This chapter presents the related studies which are significant in the development of the theoretical foundations of this study. The related literature provides the researchers with substantial background on the development and validation of the study.

Quality Management System (QMS)

According to the literature study of Firdaus et al (2022), a quality management system is a collection of written guidelines and best practices for system administration intended to guarantee that a process and product (goods or services) correspond to certain demands and criteria. The primary objective of ISO 9001:2015, an international standard for quality management systems, is to ensure that organizations produce goods and/or services that adhere to standardized requirements as set forth by the International Organization for Standardization. The ISO 9001:2015 Quality Management System mandates that in addition to implementing a quality management system, organizations must also develop a quality policy, including quality guidelines and quality objectives, as the foundation for managing the business. Additionally, it lays forth the standards and guidelines for creating and evaluating a quality management system. ISO 9001:2015 also recommends using a process-based approach to plan, develop, implement, monitor, and enhance the performance of the Quality Management System in improving satisfaction by meeting customer requirements.

The Factors Affecting the Success of Implementing the QMS

Azzouzi and Naoui (2020); Kakouris and Sfakianaki (2019) emphasized that a growing number of businesses are attempting to boost their performance and become more competitive in an environment marked by globalization, competition, and rising customer expectations (Siltori et al., 2020). Due to the numerous advantages that it may provide to their companies, enterprises are adopting and certifying their quality management systems in response to these environmental factors. This is in accordance with the standards of the international standard ISO 9001. Quality

management strengthens the products' and services' quality, including banks, as well as the operational performance of enterprises (Bhatia and Awasthi, 2018).

In relation to this, Bouchetara Et Al (2022) conducted research about the implementation of QMS in a banking service. All financial transactions in the banking sector are aimed towards the customer. In addition to using the service, they act as the factor that guarantees the bank's sustainability by providing it with the required resources (Lachache and Abdelhafid, 2019). To be competitive in their market, banks must respond to client requests more swiftly and effectively. The study aims to provide the essential guidelines for implementing a Quality Management System (QMS) following the international standard ISO 9001: 2015 within a banking service operated by a significant Algerian state bank.

The research was conducted in Algeria, Africa at the Pawnbroking banking service of Algerian public bank. The study was done utilizing a qualitative study based on document review, gap analysis grid, observation, brainstorming, and semi-directive interview for descriptive purposes. For the purpose of implementing and designing QMS accordance with ISO 9001:2015 in the Pawnbroking banking service, it has three stages: First, the diagnostic stage with the objective of knowing the Pawnbroking banking service's level of compliance with ISO 9001:2015 regulations and how it operates globally. Second, the QMS planning and implementation stage with the objective of developing an action plan based on gap analysis. And third, the actions implementation stage with the objective of now implementing the QMS. Qualitative data were obtained using the methodology to help answer the researcher's study questions and objectives.

These data were gathered at various stages of the QMS implementation process, utilizing several data collecting techniques, including document review, observation, a gap analysis grid, brainstorming, and a semi-structured interview for descriptive reasons. The researchers used various data analytic methods to assess, arrange, and use the obtained data effectively. An Excel file was used for the gap analysis, allowing the diagnosis of the existing situation. Due to Excel's data analysis features, the researchers could determine the compliance rate for each chapter and the compliance rate for the entire standard. Radar type graphs are then created to provide a fast and easy way to view the results. And performance indicators were created using these

numerical data. Voice recording and the subsequent transcription made it possible to order and use the responses to the researcher's interview questions. These interviews were conducted to describe and record the various QMS procedures. And observation was carried out to comprehend the operational procedures that the pawn firms underwent to improve and legalize them. So, the researcher wrote down each process's steps in a notebook and took photos.

After conducting the necessary steps, the researchers concluded that based on the gap analysis results, a number equal to (47%) was derived by determining the compliance rates for each chapter of the ISO 9001: 2015 standard as well as a global compliance rate for the requirements of the seven chapters taken together. Which means, given the large number of observed non-conformities, interpretation of this rate suggests that the QMS needs significant improvement. Moreover, the gap analysis enabled researchers to develop an action plan that addresses the various gaps identified. And then the researchers proceeded forward with the implementation of the actions enumerated in the action plan that make up the QMS's foundations, namely: identifying internal and external issues related to the pawnbroking service's operations; identifying relevant stakeholders for the QMS; identifying these stakeholders' needs and expectations; identifying and describing the processes; and, finally, defining the quality documentation system.

Additionally, the researchers recognize that top management is the side that bears most of the responsibility for the conception, design, and execution of the QMS within the specified parameters. Top management should communicate a quality policy that clearly states the reasons for and intended outcomes of the policy to formalize its commitment to the QMS implementation process. This is essential in light of top management's significant impact on the QMS's success (Almeida and Pradhan Jr., 2018). It suggests that commitment of the bank's top management and the involvement of all of its employees as well are the significant factors that determine the success of the implementation of QMS:ISO 9001.

The study also aims to offer guidelines for setting up a quality management system following the demands of ISO 9001:2015, a global standard. Furthermore, this research offers guidance to decision-makers or quality managers when implementing an ISO 9001: 2015 compliant QMS.

Another study was conducted in regard to implementing the QMS iso 9001:2015 that reveals the results that the success of it depends on, or the major factor is the top management commitment of that organization. Bibi S. & Dr. Aurangzeb W., 2021 done a study about implementing QMS on public and private sector universities. Their study's primary goal is to investigate the challenges that universities experience when implementing ISO 9001:2015. The research also provides some effective and practical recommendations for the successful application of ISO in universities. It was done in the public and private universities in Pakistan, specifically in Islamabad, Punjab, and Khyber-Pakhtunkhwa. The sample of the study is from the specified location composing 280 teachers from public university and also 280 teachers from the private university, with a total of 560 samples. A descriptive survey approach was used to investigate the described problem, and random sampling to select a representative sample from the population.

To get the data needed by the researchers, they utilized a five-point Likert scale (strongly disagree 1 to strongly agree 5), a self-constructed questionnaire based on a thorough review of related literature. Before collecting actual data, pilot testing was done to ensure validity and dependability. Five experts in the field assessed the questionnaire and deemed it valid for data collection. And the actual data was gathered by directly visiting the sample universities and then distributing the questionnaires. The data collected were examined using the mean and t-test. The data collected were examined using the mean and t-test. A t-test method was utilized to evaluate whether there is a significant difference between the means of two groups and their relationships. The researchers first concluded that there is no significant difference between the challenges and opportunities associated with implementing the quality management system ISO 9001:2015 at public and private institutions as it was a descriptive study. Upon analyzing the collected data were as follows.

- Public sector universities have a lack of top management commitment, greater time management difficulty, and have resistance to change, have less or no participation from people, and have a university culture that is unsuitable for implementing QMS than private sector universities.

- Universities in the public and private sectors both struggle with accreditation, have insufficient funding, lack the necessary professional training, have a lack of awareness,

and have insufficient resources. The key factor that contributes to the failure of QMS at universities is a lack of support from top management for its implementation in both public and private universities.

- The key factor that contributes to the failure of QMS at universities is a lack of support from top management for its implementation in both public and private universities.

Based on the two studies above, it is concluded that the main factor affecting the success of implementing the Quality Management System, ISO 9001:2015 on the mentioned organizations, namely: the banking service and in university, is the top management commitment. First, in the banking service, top management commitment is the highest factor identified after the researchers studied how they can implement QMS in that organization. And second, it is also the same for the mentioned private and public universities in Pakistan, that the main challenge they identified is also coming from the top management commitment.

QMS in Education

Every school presently needs to provide a high-quality education as it has become a demand and need. These requests and needs must be fulfilled in accordance with the established quality standards. It implies that the quality of education may be assessed and evaluated in relation to these requirements. The school, as a place of learning, primarily functions as a community service institution (public service). School administrators have the power to run their institutions using quality management concepts as well. Schools, as a sort of public service, must satisfy the expectations of its customers. As a result, school management emerges from a succession of school performances whose quality can be judged, including the public's perception of its impact (Firdaus et al, 2022). The achievements that become the National Education Standards can be used to assess school performance. School performance is considered good if it satisfies at least the national education requirements; nevertheless, school performance is considered less than ideal if it does not satisfy the national education criteria. Schools must truly understand that in order to satisfy educational requirements while also meeting the needs and expectations of the

community, they must demonstrate excellence (different and unique), or value contributed to school services (Firdaus et al, 2022).

The establishment of the ISO 9001:2015 Quality Management System is one of the activities that might preserve such benefits. The ISO 9001:2015 Quality Management System focuses on improving the quality of education services in all sectors in schools by referring to eight National Education Standards, namely content standards, process standards, graduate competency standards, management standards, assessment standards, infrastructure standards, teaching staff standards, and education and financing standards, as well as the ten ISO 9001:2015 clauses that are described in the quality guidelines.

Firdaus et al, 2022, conducted a study of implementing a Quality Management System to improve the performance of a Vocational High School. One level of school that focuses on quality improvement is Vocational High School, both public and private. The quality of graduates is that this Vocational High School will be directly felt by the community, companies and other graduate users. It is imperative that Vocational High Schools must be of high quality. The implementation of the ISO 9001:2015 Quality Management System is very much needed by the Vocational High School in realizing school performance. Vocational education is a learning process organized by the government to produce skilled workers (Ariyani LF, 2021).

The objective of the study intends to explain the implementation of the ISO 9001:2015 Quality Management System, which covers the stages of the program design, action plan implementation, and follow-up in enhancing school performance. It was conducted in Indonesia, wherein two State Vocational High Schools in Sumedang Regency, West Java Province are the participants. The approach used in this study is a qualitative approach and the study's data were gathered through the use of data collection techniques including such observation, interviews, data sources, and the combination of those three approaches. After the collection of the needed data, it was analyzed using a case study approach. The use of this approach begins with the study's principal goal, which is to define and evaluate facts and information based on actual requirements.

After analyzing the gathered data, according to findings of the study, the leadership of the two principals of the State Vocational High Schools in Sumedang Regency appears visionary, looks firm, patient, and devoted in resolving the problems the school is facing and has more democratic leaders. To implement the system and process approach, both institutions employ a quality management system. Effective action, follow-up, and program plans have been established by both schools, and a group of ISO experts is already at work in every school implementing the ISO 9001:2015 quality management system. These factors made it possible for the ISO 9001:2015 Quality Management System to be implemented at the two State Vocational High Schools in Sumedang Regency to function smoothly and effectively, having an influence on academic performance.

Quality Management System: Customer Satisfaction

Customer satisfaction is a measurement of how satisfied customers are in favor of the goods and services provided by a company. Customer expectations help the business to criticize and improve what it offers. Thus, taking this kind of action will make a company grow more and have good decision making.

According to Adje, et al (2020). The goal of their research study is to see how satisfied customers of the Hematology unit at the teaching hospital of Yupougon's hospital quality service. Cross-sectional studies are categorized as descriptive research because they are observational in nature and enable researchers to gather a large amount of data. Participants are chosen based on specific variables of interest. The participant profiles were patients at least 10 years of age, 21-30 age group, high school education level and students. Furthermore, the number of participants was 400 customers. The manner or procedure in gathering the data on different aspects of the pre-analytical phase such as access to the premises, reception, and cleanliness of the sampling room. The post-analytical phase was gathered like a hospital turn-around time. The survey itself was conducted during daily working hours through a form of interview. To analyze the factors for the outcome of the research The data collected was analyzed with Microsoft's Office EXCEL and EPI-info version 7.1.2 software. Creating tables for the satisfaction, workforce, and N%.

The findings of the research where the assessment of client satisfaction is an important step in maintaining and raising the quality standard of services. Even though a customer satisfaction survey cannot resolve every issue, it does allow for the identification of the strengths and weaknesses of the healthcare system in question and allows for the implementation of corrective measures. Additionally, the limitation of the study is that the respondents were all young below 40 plus years old. Since it is a hospital teaching school, they can't control or see older people for them to do the survey.

Investment in Innovation and Quality Management System

Research shows a significant relationship between growth and profitability when investing in innovation. The decision to invest becomes a "no-brainer" when the struggle to remain in a competitive world. Research and development (R&D) investments produce efficiency, productivity, competitiveness, and eventually higher sales over the long term in the businesses (Kell, 2017).

According to Bernardino, et al. (2022). The study Investment in Innovation and Quality Management System aims to determine whether investing in the said system improves the financial performance of publicly traded organizations in Brazil. How financial performance, in terms of profitability, was affected by innovation investments, by using the six sigma approach, and ISO 9001 certification (Dall'Agnol, 2020).

Non-probabilistic sampling technique was used for the quantitative research, based on a naturally restricted universe of companies listed on B3 from previously chosen companies. A non-probability sample involves deliberate non-random techniques for choosing study participants. Participant profile of company's sector that has industrial goods, oil, gas, biofuels, basic materials and non cyclical consumption. While 101 Brazilian publicly traded companies participated in the study. The procedures used in the research by gathering data were based on the profitability sector of organizations, assess the performance of huge corporations. Therefore, it has been chosen to measure the concept of performance using the metrics of ROA, ROE, and Net Margin. A quantitative approach to data analysis and handling was utilized in empirical positivist research, numerous. Regression analysis was done using the SPSS

program or also called the Statistical Package for the Social Sciences. Cross-section data were used in analyses with linear regression models. The logarithm of last year's sales revenue, company age and sector.

There is no proof of any statistically significant relationships between the analysis of all three constructs, significant evidence demonstrating that Brazilian Publicly traded corporations are having limited success in terms of their economic Six Sigma initiatives. Investing in a quality management system is a wise choice for a business looking to expand utilizing the ROA index. The limitation of the study is the profile participants where the researchers can't control the data collection in different sectors of a company. The considerable difficulties inspired the need for simplification. Problems collecting reliable long-term statistics on R&D spending that extends through in the sample of Brazilian publicly traded companies.

Document Management System (DMS)

As organizations function and communicate with customers, partners, and other stakeholders, they generate significant amounts of documents and data. Even while many organizations consider going paperless, they continue to generate, receive, and distribute documents through their various processes and systems. Document creation and compilation is rather simple. However, most institutions struggle with organizing and keeping them in a way that makes them accessible and safe (Udoagwu, 2022). According to Ahmad et al. (2017), a Data Management System is a repository that stores documents and enables end-users to get information needed.

Importance of Document Control in a Quality Management System

Document control, according to Malak (2022), is a series of procedures designed to manage the development, evaluation, approval, release, distribution, access, storage, security, and destruction of documents. Furthermore, Ferrier (2021) emphasized that document control provides assurance in the most up-to-date information as well as easily available revisions or outdated versions.

Furthermore, it is critical to keep copies under control and to keep records as proof of compliance with requirements that demonstrate the success of the QMS. To reduce the danger of information leaking, the document management system should verify that only the authorized people should have access.

Implementation Guidelines of Digital Document Management System

According to the researchers Aziz, et al (2020), implementing a digital document management system for Malaysia's public sector is not on a satisfactory level. The goal of the article is to examine the proposed guidelines' content and determine whether they are relevant for the public sector in Malaysia.

There are different methods used by the panel of experts, developing, and preparing expert review forms. Also, they conducted review sessions and guidelines endorsements. The expert review consisted of 4 people where 2 from Malaysian Administrative Modernization and Management Planning Unit (MAMPU), 1 from National Archives of Malaysia (NAM), and 1 from Chief Government Security Office (CGSO).

Expert review form gathers feedback data and to confirm the content of the guidelines by asking three questions. Number 1, Does the Government have any existing DDMS implementation guidelines to increase the adoption in the Malaysian public sector? Number 2, Do the DDMS implementation guidelines are required by the Government (in general) and the DDMS implementation team (in particular) to improve the existing implementation thus ensuring the successful implementation of this application? And number 3, Do the recommendations or proposed guidelines on empirical studies involving DDMS users are appropriate in the real environment? Also, a face-to-face approach session survey was conducted. The experts were requested to verify the format, flow, content of the document and its suitability with the Malaysian public sector context. The analysis is to be discussed by experts of DDMS implementation by applying all the six main factors which are: system capability; implementation policy; security, training; awareness programs, and top management/team member/acquaintances that support implementing the system.

Findings of the research were consulted to the experts for implementing a system. It is always a set of different plans to make an output. Making a structure for guidelines to follow. The limitation of the study is that the experts are only consulted in a specific field. It is better to have more experts in different aspects to perfectly execute the idea of a document management system.

Document Management System – A Way to Digital Transformation

Zabukovšek et al (2022) conducted a study entitled "Document Management System - A Way to Digital Transformation". The purpose of this paper is to explain the benefits and drawbacks of using a DMS as part of a company's digital transformation, as well as to offer an overview of the installation process and to examine future trends and projections in this subject. The study was conducted in Maribor, Slovenia, and the research was carried out by interviewing the company's workers who are employees of Post Slovenia, a company that implements a DMS, about their user experience and satisfaction with the usage of the new DMS using survey questionnaires. However, one of the limitations of the study is the insufficient sample size for statistical measurements and analysis.

The researchers used survey questionnaires to determine the experience and satisfaction of the employees and the results of the questionnaire were analyzed using narrative analysis. Thereafter, the researchers discovered that employees are very satisfied with the new system, which could be attributed to the fact that the new system, and thus the new method of working, saves them a significant amount of time and worry in terms of losing documents and time-consuming searches of archives. In this regard, the authors determined that the most important benefits of using a DMS are cost savings, time savings, improved business processes, regulatory compliance, and an electronic audit trail - all of which are classified into quantifiable and immeasurable benefits. However, there are drawbacks such as initial investment, staff training expenses, system failure, poor task distribution among users, and adaptability.

Investigation of Document Management Systems in Small Size Construction Companies in Jordan

Ahmad et al. (2017) believed that good management systems capable of handling the numerous information and documents associated with project activities are essential for the successful administration of construction projects and organizations. With this in mind, the authors undertook a study to analyze existing document management systems in Jordan, especially in small construction enterprises. The study emphasized the usage, components, problems, and motivation for implementing DMS, as well as their usefulness to enterprises. Interviews with open-ended questions were conducted with DMS practitioners in construction projects to aid in the investigation of important aspects of existing DMS in small construction companies, as well as to assess the motivations, challenges, and importance of successfully implementing DMS in small construction contracting firms. The respondents of the study include general managers, project managers, and site engineers, with their years of construction industry experience ranging from 8 to 25. Twenty construction businesses were interviewed, and the responses were collected. 75% of the sample is made up of small businesses with fewer than 50 workers, while 25% of the sample is made up of medium-sized businesses with between 50 and 250 employees.

The interviews used a semi-structured approach to give participants more freedom to discuss more useful, in-depth opinions and ideas. A questionnaire survey was also conducted to learn how participants felt about the current DMS processes as well as their motivations, obstacles, and the significance of successfully implementing DMS in small construction contracting firms. The data gathered through qualitative analysis was examined by the researchers, which evaluated a company's value or prospects based on non-quantifiable facts using the respondents' subjective judgment. In general, the interviews revealed that paper based DMS are more frequent in Jordan's small and medium contracting firms. However, the implementation of such systems may result in delays and difficulty in business operations, as well as the loss of critical information and expertise. Although various obstacles can impede the use of electronic DMS, small and medium-sized contracting firms should embrace approaches and technologies to facilitate the development and use of successful electronic DMS.

Moreover, the findings revealed that, despite the fact that the majority of the documents in the analyzed business are in electronic format, there is still a need for an efficient DMS in order to achieve good outcomes inside the organization. However, one of the challenges that may prevent construction organizations from adopting electronic systems is that installing and deploying these systems may necessitate a significant commitment of time, effort, and money, while the advantages may take some time to become apparent. Another hindrance may be workers' unwillingness to learn new methods and processes for implementing a new system. This may be avoided by using user-friendly systems. Using an efficient electronic DMS can assist in the organization's learning process.

Document Management System in Ibnu Sina Middle School Administration

Arifin (2022) carried out a study in order to create a document management system for Ibnu Sina Batam, one of the private junior high schools in Batam, Riau Islands Province, Indonesia. A more comprehensive information system in terms of document management is required to enable future improvements in the institution's quality. The researcher utilized Unified Modeling Language (UML), which is a visual language for modeling and communicating about a system using diagrams and associated texts, creating requirements, conducting analysis and design, and defining architecture in object-oriented programming. Aside from the analysis and review of literature, the author also conducted interviews and observations in order to collect relevant data, wherein the respondents included the faculty members and head coordinators of Sinu Batam Middle School. A login function, the ability to manage admin data, category data, incoming and outgoing mail data, and the ability to see and print reports are among the system functions that may be done. In addition to satisfying the functional requirements, the proposed system was expected to fulfill the non-functional objectives including usability, security, and adaptability.

Based on the findings of the researchers' system analysis and the discussions outlined in the previous sections, the researchers can conclude that the study resulted in a document management system that assists and speeds up Ibnu Sina Batam Middle School in handling the storage and retrieval of incoming and outgoing letters. Furthermore, the author expected that this information system will support the performance of the institutional members with their tasks and will expedite the data archiving process carried out by Ibnu Sina Batam Junior High School. However, the system is not a multi-user system, thus limited on efficiency and productivity. The system is also mostly focused on mails, and may not cater to other types of documents. Due to these reasons, the researcher would like other researchers and developers to overcome these shortcomings and implement further improvements in their future studies.

Electronic document processing operating map development for the implementation of the data management system in a scientific organization

A. Artamonov et al. (2018) created a model of system of scientific materials processing and electronic data management within a scientific organization. Their Methodology was formulated when the problem of increasing flow of incoming diverse materials and the necessity for thematic abstracting of a single material are the key factor for incorporation of EDMS in Science and Technical Institute of Interindustrial Information and their requirements were formulated as follows:

One-time registration of electronic document and document on physical media, Processing of several documents at different stages of processing in parallel mode, regular and advanced search performing of documents on the system database, maintaining statistics on the performance of staff with the system, Developed report system. In addition, this system should have the following characteristics: Ease of use. The system must have an intuitive interface; Flexibility. The system must satisfy the needs of the organization while not being burdened with redundant functions.

Their findings conclude that the development of their model of EDMS has made it possible to determine all processes of processing materials in a scientific organization

and states that “Electronic data management system based on their model will allow processing of several documents simultaneously, significantly speeding up the overall flow of documents, having a system for flexible retrieval of materials across the entire database of the system, etc.” Moreover, most of the work must be done by an operator as some of the information must be filled manually and any documents must be digital first before entering the system; documents must be scanned via printer to a digital format(PDF, DOCX, JPG, etc..).

Design and Implementation of an Electronic Document Management System

Mahmood, A. & Okumus, İ. T.(2017) stated that organizations should have an EDMS for creating, keeping and organizing data in the organization and handle all synchronization processes. In their research, system requirements for computer science institutions of polytechnic university are analyzed, software design and identifying available resources is determined and a desktop based application was developed and implemented successfully. Their implemented design has provided many advantages. However, the developed system has some shortcomings; it was only designed for managing documents and does not contain any functionality for students and employees.

Moreover, findings show the implementation of a document management system that is specifically designed for an educational institution based on their requirement. The developed EDMS provide users in the institution with a simple and efficient mechanism to access, manage and share their documents using new techniques and modifying some features in security and management. The implemented system’s every action will be audited, and archiving is performed by saving the document data in the SQL servers and saved as a PDF file in the file server as this ensures data loss prevention and data integrity.

The Role of Policies and Procedures for the Electronic Document Management System in the Success of the Electronic Document Management System in the Palestinian Pension Agency

M. Kassab et al. (2019) conducted a research that identifies the role of policies and procedures for the electronic document management system in the success of the electronic document management system in the Palestinian Pension Agency. The

researchers used the analytical descriptive method in which they tried to describe the phenomenon studied, analyze its data, the relationship between its components and the opinions that are raised around it, and use the comprehensive inventory method

due to the small size of the society. Questionnaires were used to gather the data and 108 were distributed to the community of 65 employees in the Gaza Strip and 43 employees in the West Bank. All the responses were retrieved. It is found that there is a clear adoption by the Commission of the policies and procedures put in place to implement the electronic management system of electronic documents. The study showed that there are no statistically significant differences between the responses of the study population regarding the role of policies and procedures for the electronic document management system in the success of the electronic document management system in the Palestinian Pension Agency due to variables. However, it is shown that there is a fundamental difference in the opinion of members of the study community on the role of policies and procedures for the electronic document management system in the success of the electronic document management system in the Palestinian Pension Agency attributed to the scientific qualification and shows the difference in favor of the bachelor's degree. And years of service and shows the difference in favor of the 11-15 year category.

In conclusion, the research led to a number of recommendations, the most important of which is the increase of interest and awareness of the need to implement policies and procedures to ensure the success of the electronic document management system through access to and benefit from the experiences of other institutions. It is also stated that the need to focus on the attention to develop appropriate and clear plans and dissemination on the electronic document management system and specific to specific objectives and the Commission is committed to apply them is needed to create a proper working electronic working document system.

Reviewing the Literature on Total Quality Management and Organizational Performance

According to Rateb Sweis et al (2019).The Total Quality Management standard is better customer satisfaction and better customer satisfaction leads to more customer purchases. This means more organizational income, which is what all organizations seem to be aiming for. This can be illustrated by highlighting the relationship between Total Quality Management implementation and performance. The type of impact the Total Quality Management standard has on the organization .Apply Total Quality Management knowing in advance what will happen next. Quality management includes the process of increasing the importance of services and products. It also suggests means to achieve a well-defined framework and advocates a management process flow. Quality assurance and control enables managers to improve process structures and its flow.

Employing Industrial Quality Management Systems for Quality Assurance in Outcome-Based Engineering Education

Rao Naveed Bin Rais et al (2021).The Industrial Quality Management Systems for Quality Assurance in Outcome-Based is structured as follows to provide background. mainly about quality management systems in the industrial world. This section explains the quality of higher education with a focus on quality management systems in an OBE-centric higher education environment. Highlight similarities and differences of quality management systems across industries education. It also outlines the challenges facing science in its implementation, outlining quality management systems and making recommendations to assist academics, management that practices true quality assurance education department.

System Development for Document Management System

Oleh Dyah Puspitasari Srirahayul (2018). The study states that 90% of corporate memory is stored in the form of documents, 90% of the documents generated mixed with each other, and organizations spend a lot of money to back-file documents and spend more money to find misfile documents, and more money is spent to produce the missing documents. Organizational documents lost 7.5% and 3% document

misplacement during storage; the average employee spent 30 minutes to 2 hours to find the document [2]. The results of the research that has long been done but still be able to represent the condition of the organization and documents in the digital age. Currently the organization is still experiencing problems related to the storage and retrieval of documents.

Electronic Document Management System (EDMS) Implementation: Implications for the Future of Digital Transformation in Philippine Healthcare

This study conducted by Almacen and Cabaluna (2021) discusses the implementation of an Electronic Document Management System (EDMS) in the healthcare system of the Philippines, and the potential implications this could have for digital transformation in the country's healthcare industry. An EDMS is a type of software that allows for the digital storage, management, and sharing of documents and other information, and the implementation of an EDMS in healthcare could bring several benefits. The authors stated that it could improve the efficiency and accuracy of patient record-keeping, facilitate better communication and collaboration between healthcare providers, and enable more secure and efficient sharing of patient information. The article also examined the challenges associated with implementing an EDMS in healthcare, such as the need for strong data security measures, the costs of purchasing and maintaining the software, and the need for healthcare providers to be trained in using the system. Overall, the study suggests that the implementation of an EDMS in the healthcare system of the Philippines could be a significant step forward in the country's digital transformation and could have a positive impact on the quality and delivery of healthcare services.

University of Santo Tomas Faculty of Medicine Document Management System (MDMS)

According to Dizon et al. (2017), a functional system is necessary to efficiently manage the large quantity of documents within an organization, and a document management system can aid in productive document management. Hence, they conducted a study of which the purpose is to create a system that reduces paper usage

and facilitates rapid report generation for important decision making. The research also aims to smoothly manage the flow of documents in and out of the Dean's Office of the University of Santo Tomas Faculty of Medicine and Surgery. The software development utilized an agile approach to meet the specific needs of the client.

The University of Santo Tomas Faculty of Medicine and Surgery is currently facing challenges in managing their documents, particularly in the Main Office of the faculty. The Faculty of Medicine and Surgery has twenty-four departments, and the Main Office frequently distributes and receives documents from each department. Managing and tracking compliance from all these departments and their Chair and/or Faculty Members is difficult due to the volume of document flow, so the authors have proposed the development of a web application dedicated to the Faculty of Medicine and Surgery to assist in organizing and managing documents entering and leaving the main office.

The results of the study have shown that the proposed system has met all of the user or client's needs and additional functionalities were also provided. Testing by the developers and users of the system revealed that all modules were functional, with some minor bugs. These bugs were caused by programming errors, which have been resolved by the authors. Lastly, the researchers concluded that the MDMS can successfully store and manage documents and improve efficiency within the Faculty of Medicine and Surgery. It is currently operational, but requires regular maintenance by the IT department.

Electronic Document Management System for Higher Education Institution

This research by Estrera (2017) examined the existing document management issues within Higher Education Institutions as per the Quality Management System of ISO 9001. It identified a number of discrepancies in terms of tracking, maintaining, and transferring documents between offices. These problems included issues such as document loss and redundancy. As a solution, an Electronic Document Management System (EDMS) was proposed. The study employed two methods, the Spiral Model and an In-house Development Program, to develop the EDMS.

The system was subsequently tested by three colleges within Capitol University in Cagayan de Oro City, Computer Studies, Business Administration, and Criminology and evaluated by the deans and secretaries of these colleges. The evaluation phase revealed variations in terms of time spent on document management and this was

monetized to identify cost-reduction opportunities for implementation. The results showed that the EDMS met quality standards, saved time, and was cost-effective. It is suggested that the EDMS should be fully implemented in all colleges within the university and that future research should focus on upgrading the system and making it available online for centralized, efficient document tracking and monitoring.

Development of E-Document Management System for Higher Education Institution

The purpose of this research conducted by Pagayonan (2022) is to address the problems related to record keeping and document control in a university, as per the ISO 9001:2015 Quality Management System. The research has found several issues such as disparities in tracking, preserving and forwarding documents between offices, and a variety of sources such as document loss and redundancy were identified as causes. To solve these problems, an E-Document Control Management System was developed. The system's usability and performance were evaluated by 165 participants. A developmental-descriptive research design was used, and data was collected through a modified version of the PSSUQ instrument for usability, and a researcher-created survey questionnaire for performance efficiency based on ISO/IEC 9126 criteria.

The findings indicate that when implemented, the system can effectively handle the delivery of incoming and outgoing communication, as well as the recording and retrieval of personal files for end-users. The electronic recording and retrieval of records is fast and efficient. To meet the needs of the users, the system includes a series of useful components. The NISU Record Officer also reported that the system has helped to organize the work and streamline the daily tasks.

Based on the study's results, Pagayonan (2022) concluded that the document management system effectively manages daily records, which is deemed a crucial aspect of the university's quality management system in delivering excellent services to clients. Furthermore, the E-Document Management System was found to be highly user-friendly, owing to its straightforward design and easy-to-understand features. Lastly, the system was able to meet the expectations of the Record Officer and the Faculty and Staff of NISU Estancia, Iloilo, Philippines in terms of information accuracy and timeliness provided to clients.

CHAPTER III
Methodology

This chapter discusses the methods and procedures that the researcher used in gathering the needed information to answer the specific problem of this study. This chapter also provides the activities and methods used by the researchers in the development of the Internal Quality Audit Module for PUP Institutional Quality Management System Portal.

Method of Research

The proposed study will mainly involve two phases, mainly the research writing phase and the software development phase. In the research writing phase, this study will employ quantitative research methods such as sampling techniques and statistical tools for interpreting quantitative data. In addition, several steps and procedures will be taken in conducting the research specifically in designing, collecting, analyzing, and interpreting data in order to provide a solution for the stated research problem.

In the software development phase, the researchers will aim to apply the Agile methods for the development of the system. Agile software development emphasizes customer collaboration, iterative development, cross-functional teams, and continuous improvement. In the proposed Documented Information Management System, this approach can ensure that the system meets the user needs, is developed in a flexible and collaborative manner, and provides ongoing value through iteration and continuous improvement.

Population, Sample Size, and Sampling Technique

The main campus of the Polytechnic University of the Philippines will serve as the target population of the proposed system, which consists of 242 audit team members from all offices in the Polytechnic University of the Philippines, Sta Mesa. The researchers plan to use the Slovin's formula to calculate the appropriate sample size for the study. Considering a 5% margin of error, a sample size of 4 audit members was selected from a population of 242 to represent the larger group.

The Slovin's formula is as follows:

$$n = N / [1 + N(e) ^2]$$

where, n = sample size

N = total population

e = margin of error

n = 242 / [1 + 242(0.5) ^2]

n = 3.93

n = **4**

Description of Respondents

The respondents of the study are the process owners of the Polytechnic University of the Philippines only, and those who are not considered as process owners will be excluded. They are the focal persons who are responsible for the process manuals of different sectors, offices, and departments. Process owners are the target respondents since they are the ones who will use the documented information management system.

Research Instrument

In this study, interviews and focus group discussions with the users and stakeholders will be carried out in order for the researchers to evaluate the usability of the proposed system and to gather information through the feedback of the users in terms of ease of use, effectiveness, and overall satisfaction of the system. With the use of this research instrument, the researchers will be able to identify specific issues or problems with the system and implement necessary repairs and improvements.

Data Gathering Procedure

Aside from collecting and reviewing the relevant literature and studies, the researchers will also utilize the available documents and manuals from PUP as an additional reference in designing and developing the proposed system. In-person meetings and consultations will also be crucial in gathering data for the system. Additionally, the researchers will gather data from the users and process owners through interviews and questionnaires after implementing the system as they test its features and functionalities, and to determine whether there are certain issues and significant improvements that can be made.

Statistical Treatment of Data

The researchers will use measures of central tendency. There are three parameters for obtaining central tendency: mean, which is obtained by dividing the sum of values by the number of observations in the questionnaire; median, which is obtained by finding the middle value of an ordered list of observations; and mode, which represents the most common value. Statistical treatment helps to communicate research findings and add credibility to the methodology and conclusions. It may also help the researchers to make decisions based on the information they have obtained.

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