

Inventory Module for the Financial Enterprise Resource Planning System of Pamantasan ng Lungsod ng Maynila

A Project Presented to the Faculty of College of Engineering and Technology Pamantasan ng Lungsod ng Maynila

In Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science

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ABSTRACT

(An abstract includes: Purpose, Implications, Methods, and Results)

The maximum length of the abstract is one to two pages. Use 12-point Times NewRoman and 1.5-line space.

An abstract should contain the summary of the study including significant findings, information, data and analysis. Also, problems and objectives are solved and addressed.



ACKNOWLEDGEMENT

The acknowledgements should be in the third person.

-Juan C. Dela Cruz





CERTIFICATE OF ORIGINALITY

We hereby declare that this submission is our own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person nor material to which to a substantial extent has been accepted for award of any other degree or diploma of a university or other institute of higher learning, except where due acknowledgement is made in the text.

We correspondingly make known that the intellectual content of this capstone project is the product of our work, even though we may have received assistance from others on style, presentation, and language expression.

Signature of Advisees over printed name	Date
Signature of Advisor over printed name	Date



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CHAPTER 1

THE PROBLEM AND ITS SETTING

(Each chapter should begin in a new page.)

1.1 Introduction

(A good introduction must answer 2 questions: Why is your study needed to fill the gap in the scientific knowledge? Why does this gap need to be filled? Can use TIOC format: Trends, Issues, Objectives, Contributions. In the Trends portion, identify the knowledge gap to the ones previously reported or conducted in the research literature. In the Issues portion, state the necessity of the research problem (why it needs to be filled), including its theoretical or practical implications. In the Objectives portion, state how this study attempts to fill/solve the gap. In the Contributions portion, emphasize the present study's uniqueness and/or importance in contrast with the prevailing studies in the literature.)





Inventory systems are an integral part of an institution's core processes. Most organizations manage a large amount of data and information. These are then processed and stored according to their designated use, which makes handling them manually especially difficult due to their high volume. An Enterprise Resource Planning (ERP) software is implemented to sufficiently manage, calculate, and organize these data. ERPs are enterprise information systems that optimize business processes (Moon, 2007). These types of software often include a range of features that are relevant to the organization such as transaction handling, data analysis, and inventory management (Biel, 2023).

Assets are items or people that an organization deems valuable. They are oftentimes an organization's most valuable resource and may include financial assets like cash or intangible assets like employees. Managing asset data and information may become increasingly difficult as an organization's total assets increase.

Asset management is the systematic process an organization uses to realize value from assets (ISO, 2014). It is concerned with asset reproduction, maintenance, and risk mitigation (Ganti, 2023). The inventory of an organization is one of its most valuable assets. Inventory management is a subset of asset management associated with asset maintenance and risk mitigation. It involves ordering, storing, using, tracking, and reporting an organization's assets (Hayes, 2023). Inventory management is a common process in ERP software. It is important to maintain an accurate and functional inventory system for an organization's coordination and financial security.

Pamantasan ng Lungsod ng Maynila (PLM) is a local university located in Manila with an estimated 6,636 students (PLM, 2019). The university houses several facilities and departments. Among these departments include the Finance or Accounting department. The PLM Accounting department manages most processes related to the university's transactions and cash flow. This includes student tuition, staff payroll, and university expenses. It also handles computations for the university's assets, financial matters, and inventory.

The current implementation of an inventory system for PLM's accounting





department involves manually tracking each shipment of an item and manually computing relevant costs and values. This implementation poses several problems. (1) Manual computation is tedious and prone to human errors. (2) Manual processes are slower compared to digitized alternatives. The time it took to manually compute these values could have been allocated to other tasks. This greatly affects the organization's efficiency and processing time due to the sheer amount of manual labor it requires. (3) Lack of digitization limits integration with other systems and processes. These problems must be addressed to optimize the accounting department's workflow and increase its efficiency. Digitizing this system could decrease some of the department's workload, letting them focus on more important tasks. Increasing the department's efficiency and processing times could greatly help professors, staff, and students alike. For instance, the department, being free to perform more important work, could release the staff's payroll on time or at an earlier date. Requested documents could also be provided sooner due to the extra time that the department could obtain.

Increased free time and breaks could significantly increase productivity (Henning et al., 1997). This may be due to employees experiencing less burnout due to stress from excessive work. In addition, a study from Singapore suggests that stress negatively affects worker productivity (Wibowoo et al., 2021).

This project attempts to digitize the accounting department's inventory system and processes related to it. This could greatly benefit the department's workflow and efficiency. It could also increase the department's work quality, work environment, and work experience. It would not only help the department's current employees but also future employees.

1.2 Background of the Study

(Clarifies the importance of the paper / a detailed and an in-depth discussion of





problem(s) of the current system)

The inventory process involves two offices within PLM, the Accounting Office (AO) and Properties and Supplies Office (PSO). The Accounting Office primarily manages cost-related aspects while the PSO manages the quantity-related aspects of the inventory. These offices work in tandem to maintain an accurate and up-to-date inventory.

The Accounting Office (AO) inventories two kinds of assets, fixed (properties) and current (supplies).

I. Fixed

The AO procures fixed asset data from the PSO. The fixed asset data from the PSO involves the asset's Account Title, which is the name of the fixed asset, and the Account Code, which is used to reference the Asset. The asset's cost comes from (san nanggagaling fixed asset cost?). This cost is then used to calculate the asset's depreciation value, which is the yearly rate that the asset's value decreases. The computation for depreciation is done manually. The process for this is as follows. First, the Salvage Value (SV) is calculated by computing 5% of the original cost of the asset. The SV is the minimum value that the asset is allowed to have after yearly depreciation. The depreciation rate itself is then calculated using the formula: ([Cost of Asset]-[SV])/[Useful Life]. The "useful life" portion of this computation is based on the estimated useful life table which is based on the asset's type. The computed value is subtracted from the original value of the asset each year. Fixed assets are maintained yearly.

II. Current

Current assets are maintained monthly. Each department submits a report of the shipments and issuances of their items. The AO manually writes these changes to the Supplies Ledger Card (SLC) which keeps track of the receipt (total number of received





items), issue (total number of issued or outputted items), and balance (total current items); each item has its own SLC. All three of these fields have three more fields, quantity, unit cost, and total cost. If a shipment is received, the receipt quantity is added to the previous balance quantity, consequently, the receipt total cost is also added to the previous balance total cost. These two newly computed values are added to the next slot in the SLC with their corresponding dates. The new unit cost is computed by dividing the new total cost and the new quantity. However, if items are issued, the issued quantity and issued total cost are subtracted from the previous total quantity and previous total cost respectively. An update to the SLC is performed every time a shipment is received, or items are issued. These computations are all done manually with a pen, paper, and a calculator. Once all the SLCs have been updated for all items, a Summary of Supplies Management Index (SSMI) is presented to every department. The SSMI contains items relevant to the department. It contains information about the item's stock on hand, quantity issues, unit cost, total cost, and current balance on hand of the item.

III. Auditing

The inventory is audited and checked by representatives from both the PSO and AO. During the auditing process, each item's quantity is inspected and compared. If the quantities match for all items, officials from both offices sign the documentation. The signatories for these documents must be either a chairperson or a proper substitute according to the office's hierarchical structure.

1.3 Project Context

(Gives justification why we need to implement this project proposal. Discussion of goals/objectives/key features & functionalities/modules to be included in the proposed system)





PLM's Accounting Office face significant challenges with efficiency due to the lack of digitization and automation of calculations, processes, and related tasks. The lack of these features greatly affects performance and productivity. The developers conducted an interview with the Accounting Office and have been made aware of a number of gaps and problems. They have also been informed of the functionalities and forms that the system must contain to meet the AO's processing requirements.

The proposed features to be implemented are discussed below.

I. Login

The system implements a login system for different employees with different responsibilities within the AO. These user types are used to implement the principle of least privilege in the system.

a. Regular Users

Regular users include the AO's regular employees. They are restricted to either encoding or viewing inventory information. They are restricted from seeing other inventory information like computations and costs.

b. Admin Users

Admin users are part of the AO's upper management. They handle inventory computations and reports. According to an interview with the AO, there are currently four people dedicated to updating and maintaining the SLC for all departments within the university. Each item in the university has an SLC which keeps track of all changes to the item's supply. Each person is responsible for a set of departments. For example, an Inventory Administrator could handle the University Health Services (UHS) Department and the Gym.





c. SuperAdmin Users

SuperAdmin users are persons dedicated to the maintenance and management of the software system. They are people with the expertise to update, maintain, and tackle issues with the software system.

II. Inventory

The inventory keeps track of all the items in the university. It must be regularly updated and maintained to uphold accuracy and relevance.

a. Inventory Updates

The inventory updates page of the system displays all updates to the inventory. This involves changes in the system itself and changes to the supplies in the inventory. The information within this page or not fully available to every user, only administrators are allowed to see updates regarding the departments that they handle. For regular users, changes in the software are displayed here.

b. Inventory List

The inventory list shows all the university's supplies. Accessing the entire inventory list requires the approval of all administrators. Otherwise, each administrator is only allowed access to their specified inventory area.

III. Fixed Assets

The university's fixed assets are updated yearly. Each new purchase or acquisition is added to the fixed asset inventory at the start of each year.

a. Depreciation Computation





The system will implement a feature to automatically compute for a fixed asset's depreciation value. This will be deducted automatically each year until the salvage value is reached. Once it has reached is salvage value or has surpassed its useful life, the asset is given to the PSO for decommissioning. Once it has been approved, the asset is removed from the list of current assets.

IV. Current Assets

Current assets are updated each month. Reports regarding each department's shipment and issuance of items are given to the AO. Necessary calculations are performed using these reports.

a. Digitized Supplies Ledger Card and Automated Computations

The system will implement a digitized version of the AO's current implementation of inventory management, the SLC. It will also automatically compute for all relevant values in the Balance section of the SLC. The SLC is a per-item form which tracks all additions, subtractions, and current balance of an item. In the digitized SLC, only the Receipt and Issued fields are set, the Balance is computed and updated automatically based on the receipt or issuance of items. The completion of this form is necessary for the generation of the SSMI report.

b. SSMI Report Generation

The Summary of Supplies Management Index (SSMI) is a report which displays all updates to a department's inventory within a specified period. This report is submitted back to the department for review and safekeeping.

V. Auditing





The Auditing schema of the AO relies on both parties from the PSO and AO reviewing and validating each item or report. Each office maintains their own set of inventory items; however, both offices merely receive data from each department within the university. The quantity of items that the PSO holds should match the quantity of items that the AO receives. This is done to ensure that no corruption has occurred in either of the offices.

1.4 Statement of the Problem

(Enumerates the different problems that will be solved in the present study.

Focuses on process issues of current system / observable phenomenon or phenomena.

Have an introductory statement such as: The proponents would like to solve the following:

- 1.
- 2.
- 3)

The developers aim to solve the following problems:

- 1. The developers would like to solve the lack of digitization that the Accounting Office experiences. This issue greatly affects their productivity and results in wasted time.
- 2. The developers aim to solve the prevalence of human errors due to manual computations done with inventory data. The lack of automated computations could result in inaccurate computations.
- 3. The Accounting Office's lengthy and inefficient processing time is an issue that the developers would like to remedy.

1.5 Objectives of the Study





(Closely related to the statement of the problem and summarizes what you hope to be achieved by the study. Have an introductory statement such as:

The main objective of the study is to develop [Title of your Capstone Project] for [Client/Organization name] that [General Objective].

Specifically, the study aims to:

- 1.Create/develop/build/design
- 2. Create/develop/build/design
- 3. Create/develop/build/design)

The main objective of the project is to develop an Inventory Module that assists in the computations, reports, and processes related to the university's inventory for the Financial ERP of PLM.

Specifically, the project aims to:

- 1. Develop a digitized implementation of the Accounting Office's inventory management process which supports database integration.
- 2. Develop an effective inventory system which streamlines the Accounting Office's workflow.
- 3. Automate the computations and reports necessary for the Accounting Office.
- 4. Integrate an auditing schema which involves the PSO department for validation.

1.6 Significance of the Study

(Identify the present and future beneficiaries of the study. Have an introductory statement such as: This research will [main benefits/significant impact].

Specifically, this research will benefit the following:

Entity 1. (Discuss the specific benefits to the identified entity)





Entity 2. (Discuss the specific benefits to the identified entity)

Entity n. (Discuss the specific benefits to the identified entity)

This project will optimize and automate processes related to the Accounting Office's inventory management.

Specifically, this project will benefit the following:

I. Accounting Office

The primary beneficiaries of this project are the Accounting Office and their employees. The successful implementation of this project could result in the optimization of the whole workflow of the Accounting Office. It could also result in less stress, more free time, and thereby, more productivity for the AO's employees. This could also benefit the processing time for documents and computations that other departments may require for their own processes.

II. Staff and Faculty of PLM

The reduced processing time for documents could greatly benefit PLM's staff and faculty because the AO handles both their payrolls. The extra time gained from implementing this system could leave them free to tackle more important work like validating payroll information, thereby speeding up the release of salaries.

III. Students of PLM

The reduced processing time could also benefit students. Documents or statements requested by students could be received sooner due to the AO being free to work on these documents.

IV. Future Researchers





The implementation of this project into the Accounting Office's system could help future researchers further optimize the AO's system.

1.7 Scope and Limitations

(Discuss in narrative form what are the key functionalities and features that will be covered and implemented by the study. Likewise, discuss what will be excluded which can serve as recommendation for further enhancement on future researchers.)

This project aims to provide a software solution to the Accounting Office that optimizes inventory processes and computations. It will be developed and implemented at PLM. The developers observed the mechanics of the AO and interviewed relevant personnel to gather information about the AO's problems, requirements, and preferences regarding their inventory.

The features of this project will include a login page, different user levels, inventory reports, inventory computations, and inventory auditing. These features are necessary to the Accounting Office's inventory processes. Consequently, features like graph generation, in-depth auditing, and integration with other apps like Microsoft Excel are out of the scope of this project. This project will focus mostly on the digitization of the Accounting Office's current system of inventory management. Future developers could implement these features and optimizations if they decide to pursue this project.

1.8 Definition of Terms

(In alphabetical order, define the relevant Conceptual and Operational terms used in this study)

Term 1. Definition here

Term 2. Definition here

Term n. Ddefinition here





Assets

Anything that an organization deems valuable. May include tangible (products) or intangible (employees) assets.

Audit

A process where the organization's accounts, reports, and statements are inspected and verified for consistency. This is done to maintain integrity.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES

(Each chapter should begin in a new page.)

2.1 Conceptual Framework

(Contains visual representation (i.e. diagram) of overall research ideas about the fundamental structure or components as well as its interaction with each other.)

Text begins as a new paragraph

2.2 Related Literature

(Related Literature is composed of discussion of facts and principles to which the





present study is related (usually found in published books, encyclopedias, professional journals, magazines, newspapers, and other publications). Researchers are expected to read and examine 20 related studies that are dated 5-10 years from the student's date of writing.)

Enterprise Resource Planning (ERP) is a widely used business software. The National Institute of Standards and Technology SP 800-82 (2015) defines ERPs as an integrative system which includes enterprise-wide information such as human, manufacturing, distribution, customer relations, and financial resources. It is a multi-purpose system with the aim of optimizing or automating business processes. ERPs are used by small and large enterprises, organizations, and institutions to mitigate a plethora of problems in the business process or optimize existing solutions.

According to Nwankpa (2015), ERP systems offer a wide array of benefits and uses, including increased productivity, improved performance, enhanced collaboration and communication, and reduced costs and risks. The study concludes that ERP systems are effective solutions to modern business problems and requirements, and that their effectiveness justifies the prioritization of their budget and enhancement costs. It is also worth noting that ERP systems may have different operating costs depending on the size, budget, and requirements of the enterprise.

Software as a Service (SaaS) is a widely used software delivery model that provides on-demand access to software applications hosted and managed by a service





provider and charged based on usage (Tsai et al., 2014). SaaS software is often more accessible, cost less, and feature regular updates. They are usually made and provided by large companies with access to thousands of developers that can work on updates and features simultaneously. However, due to the large-scale nature of SaaS software, users are often left to rely on the developers for patches, updates, and feature updates. Thus, SaaS-provided software generally has lower quality of service and security (Tsai et al., 2014).

ERP systems are among the software services that are commonly offered as SaaS. An article by Seethamraju (2014) discusses the implementation of SaaS-provided ERPs in small and medium sized enterprises (SMEs). The author lists several benefits for using SaaS as a delivery model for ERPs such as lower upfront costs, faster implementation, scalability, flexibility, reduced maintenance, and improved security. However, it is also noted that several issues such as limited customization, integration issues, data ownership, vendor lock-in, and legal and regulatory compliance. These issues reveal the gap between SaaS-provided and customized ERP software.

Each ERP system requires different features and specifications. These requirements are generally based on the organization's goals, objectives, and processes. According to an analysis by Asgar and King (2016), most ERP software include features such as data analysis, reporting, data storage, and other customized features based on the organization's requirements. It is worth noting that different requirements may be





synthesized from different requirement gather methods. As such, requirements and requirements gathering methods should be carefully deliberated within the organization.

A study about the Challenges and Success Factors of ERP Systems in Australian SMEs by Venkatraman (2016) suggests that ERP systems are essential to the streamlined and efficient process of an enterprise of any size, especially those that are rapidly growing like the company discussed in the article. As such, the proper implementation of an ERP system is monumental to the operations of any organization. According to the study, alignment with business processes, data access, and reduced processing time are key factors to the success of an ERP.

Recent ERP trends also show that the adaptation for ERP systems in SMEs are slow but have been gradually increasing. This may primarily be due to the increasing requirements and scale of data processing that most SMEs are required to uphold. As such, the market for ERP systems still contains plenty of room for development (Bahssas et al., 2015).

Inventory is a company or organization's raw materials, supplies, products, and goods. As such, the inventory is part of an organization's assets. According to Essentials of Inventory Management by Muller (2019), an inventory's costs mainly fall into two categories, ordering and holding. Ordering costs primarily involve the organization's shipments of supplies, goods, and raw materials. Conversely, holding costs involve the





cost to store the inventory, salaries of the inventory handlers, and other expeditive costs concerning the inventory.

Inventory Management in the simplest sense is the management of inventory flow. As stated in Basic Concepts in Inventory Management by Vrat (2014), there are several inventory management models for different inventory types and needs. An inventory management model must be chosen in order to avoid inventory problems like purchasing, holding, and shortage costs. To preface, an inventory management model considers all inventory problems and requirements and attempts to form a middle ground that takes everything into account.

Inventory policies are essential to effective inventory management. A study conducted by Zhou and Yang (2016) suggests that the policy should base on the demand rate, lead time, unit cost, and holding cost of the inventory system. These considerations are essential to the effectivity of an inventory policy, and by extension, the inventory management process.

A common use case for ERP systems includes inventory managements. A study by Amin and Kushwawa (2021) states that effective inventory management can reduce operational costs in the supply chain of an organization. In addition, the use of an ERP system for inventory management provides significant benefits to the efficiency of the inventory process. Consequently, inefficient inventory management leads to difficult management and loss of clients (Amin & Kushwawa, 2021).





Designing an ERP and its subsequent modules require a lot of skill, coordination, and understanding of the company or organization's requirements. An article which tackles the design of a feature-based order acceptance and scheduling module in an ERP system by Wei and Ma states that the synthesis of the features of an ERP system requires several prototypes. These prototypes are then reviewed iteratively until a workable feature list and flow is created (Wei & Ma, 2014).

According to Financial Accounting with International Financial Reporting

Standards by Weygandt et al. (2018), an account is an accounting record of changes in a specific asset, liability, or equity item. Accounting is the task of updating such records.

As such, accounts as well as accounting is closely related to inventory and inventory management. The book discusses several principles about accounting and inventories, as well as inventory errors.

The International Financial Reporting Standards (2015) defines assets as an existing economic resource that was previously obtained due to past events and is now controlled by an entity. Consequently, an economic resource is a right that can produce economic benefits. In this case, a "right" may take several forms such as contracts, legislations, financial instruments, physical objects, etc. (Kapis & Brown, 2015). Therefore, inventory management is a subset of assets management.

According to Xolmirzaev (2020), financial assets are financial resources and could be in the form of cash, securities, and income-generating financial liabilities. In





other words, financial assets include cash, accounts receivable, and long to short-term investments. There are two primary types of assets according to Xolmirzaev, tangible and intangible. Tangible assets include assets that contain physical substance like equipment, properties, and automobile. Likewise, intangible assets include assets with no immediate physical substance like a company's workforce.

The demands of financial accounting have become increasingly more complex due to the volume of data that most modern enterprises are required to handle. According to an article by Lin (2019), financial accounting systems often need general ledger management, asset management, and payable management. These features are often needed to streamline financial processes and, to an extent, generate income.

Several asset types exist in financial accounting. Among these are fixed assets.

According to Oxford's Dictionary of Finance and Banking by Law and Smullen (2008),

fixed assets are a type of asset intended for extended or continued use. Some examples of
these are buildings, automobiles, and office equipment. These assets must be listed
together with their purchase price, market value, director's valuation, or using the equity
method of accounting.

As items are used their functionality and quality eventually degrade over time. Likewise, the item's overall value also decreases as time passes. An analysis of the different depreciation methods was synthesized by Giudice et al. (2016) detailing depreciation and its methods. Depreciation is an issue that usually involves fixed assets





due to their long-standing nature. The study details nine different methods for the computation of depreciation. These are straight-line, sum of years digits, declining balance, declining balance switched to straight line, sinking fund, annuity, machine hours, production units, and depletion methods. According to the researchers, different methods of depreciation are more practical than others depending on the application. As such, the method should be carefully deliberated.

Accounting for inventory is an essential task when it comes to inventory management. According to Purnasamari et al. (2021), inventory control is an essential managerial function because the inventory of an enterprise is usually its largest asset. Proper inventory accounting should be implemented in all inventory and financial systems to prevent inventory problems.

The implementation of ERP in inventory systems, and by extension, financial systems, is effective (Vakilifard et al., 2013). They improve performance, efficiency, and functions of processes in an organization. The automation, accuracy, cost-reduction, and freed-up management that ERP systems provide make them a compelling addition to enterprises of any scale (Vakilifard et al., 2013).

2.3 Related Studies and/or Systems

(Related Studies, are inquiries or investigations already conducted to which the present proposed study is related or has some bearing or similarity (e.g. usually





unpublished materials such as manuscripts, theses and dissertations). Researchers are expected to read and examine 20 related studies that are dated 5-10 years from the student's date of writing.)

Text begins as a new paragraph

2.4 Synthesis

(Summarizing and linking different sources by identifying the strengths and weaknesses of the research argument in order to make recommendations, comparison, and conclusion.)

Text begins as a new paragraph



CHAPTER 3

TECHNICAL BACKGROUND

(Each chapter should begin in a new page.)

3.1 Procedures of Business Activities

(Discuss your proposed system business functionalities modules (how it will work once implemented)

Text begins as a new paragraph

3.2 Current Context Diagram

Diagram here

3.3 Current System Flowchart

Diagram here

3.4 Current Use Case Diagram

Diagram here

3.5 Entity Relationship Diagram

Diagram here



CHAPTER 4

METHODOLOGY OF THE STUDY

(Each chapter should begin in a new page.)

4.1 Software Development Methodology

(Discuss what SDLC model used and how it was applied in your research development)

Diagram and paragraph here.

4.2 Technical Feasibility

(Discuss the software and hardware used and it's compatibility)

4.3 Operational Feasibility

(Discuss who will be the stakeholders and users who will utilize the software solution and the training that will be provided among them)

4.4 Schedule Feasibility

Gantt Chart





4.5 Economic Feasibility

Cost Benefit Analysis

4.6 User Interface Design

UI screenshots

4.7 System Architecture

Diagram here

4.8 Software Architecture

Diagram here

4.9 Test Plan

Diagram here



CHAPTER 5

RESULTS AND DISCUSSION

(Each chapter should begin in a new page.)

- **5.1 Software Test Cases Results**
- **5.1 Evaluation Results**



CHAPTER 6

IMPLEMENTATION PLAN

(Each chapter should begin in a new page.)

- **6.1 Hardware Requirements**
- **6.2 Software Requirements**
- **6.3 Manpower Requirements**
- **6.4 Implementation and Evaluation**



CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

(Each chapter should begin in a new page.)

- 7.1 Conclusions
- 7.2 Recommendations



REFERENCES

(The American Psychological Association (APA) style 7th edition is used for the references. All references are listed in alphabetical order. All references are listed together; i.e., there is no segregation of books from journals and websites. The references are not justified, not indented in the first line and with 0.5" indentation in the succeeding line. References are single space within the paragraph and are separated by 1 line.)

Moon, Y. B. (2007). Enterprise Resource Planning (ERP): a review of the literature. International Journal of Management and Enterprise Development, 4(3), 235. doi:10.1504/ijmed.2007.012679

Biel, J. (2023). 12 Core ERP System Features and Their Benefits. Oracle NetSuite. Retrieved from https://www.netsuite.com/portal/resource/articles/erp/erp-features.shtml

International Organization for Standardization. (2014). Asset management —Overview, principles, and terminology (ISO Standard 55000:2014). https://www.iso.org/standard/55088.html





Ganti, A. (2023, July 16). What is Asset Management and What Do Asset Managers Do?. Investopedia. Retrieved from

https://www.investopedia.com/terms/a/assetmanagement.asp

Hayes, A. (2023, March 28). Inventory Management Defined, Plus Methods and Techniques. Investopedia. Retrieved from

https://www.investopedia.com/terms/i/inventory-management.asp

Pamantasan ng Lungsod ng Maynila. (2019, August). Information for Students. Retrieved from https://www.plm.edu.ph/students

Henning, R., Jacques, P., Kissel, G. V., Sullivan, A. B., & Alteras-Webb, S. M. (1997) Frequent short rest breaks from computer work: effects on productivity and well-being at two field sites. Ergonomics, 40:1, 78-91. DOI: 10.1080/001401397188396

Wibowo, A. D., Rayid, I., Farida, U., Tamsah, H., Rusli, M., Yusriadi, Y., Tahir, S. Z. B. (2021, March 7). The Influence of Work Stress and Workload on Employee Performance Through the Work Environment at SAMSAT Makassar City. Proceedings of the 11th Annual International Conference on Industrial Engineering and Operations Management Singapore. Retrieved from https://www.ieomsociety.org/singapore2021/papers/1058.pdf

National Institute of Standards and Technology. (2015). Guide to Industrial Control Systems (ICS) Security. (NIST SP 800-82 Rev. 2). National Institute of Standards and Technology. https://doi.org/10.6028/NIST.SP.800-82r2s

Nwankpa, J. K. (2015). ERP system usage and benefit: A model of antecedents and outcomes. Computers in Human Behavior, 45, 335–344. doi:10.1016/j.chb.2014.12.019

Tsai, W., Bai, X., & Huang, Y. (2014). Software-as-a-service (SaaS): perspectives and challenges. Science China Information Sciences, 57(5), 1–15. doi:10.1007/s11432-013-5050-z

Seethamraju, R. (2014). Adoption of Software as a Service (SaaS) Enterprise Resource Planning (ERP) Systems in Small and Medium Sized Enterprises (SMEs). Information Systems Frontiers, 17(3), 475–492. doi:10.1007/s10796-014-9506-5

Asgar, T., & King, T. (2016). Formalizing Requirements in ERP Software Implementations. Lecture Notes on Software Engineering, 4(1), 1-7. Retrieved from https://www.researchgate.net/profile/Talukdar-S-Asgar/publication/266851314_Formalizing_Requirements_in_ERP_Software_Implementations.pdf





Venkatraman, S. (2016). Challenges and Success Factors of ERP Systems in Australian SMEs. Systems 2016, 4(2), 20; https://doi.org/10.3390/systems4020020s

Bahssas, D., AlBar, A., Hoque, R. (2015). Enterprise Resource Planning (ERP) Systems: Design, Trends and Deployment. The International Technology Management Review, Vol. 5 (2015), No. 2, 72-81. Retrieved from

https://www.atlantis-press.com/journals/itmr/24089?utm_source=TrendMD&utm_mediu m=cpc&utm_campaign=The_International_Technology_Management_Review_TrendM D_1

Muller, M. (2019). Essentials of Inventory Management 3rd Edition. HarperCollins Leadership.

Vrat, P. (2014). Basic Concepts in Inventory Management. Materials Management, 21–36. doi:10.1007/978-81-322-1970-5 2

Amin, R., Kushwawa, B. P. (2021). Increasing the Efficiency and Effectiveness of Inventory Management by Optimizing Supply Chain through Enterprise Resource Planning Technology. ResearchGate. Retrieved from

https://www.researchgate.net/profile/Rubel-Amin/publication/364344395_Increasing_the _Efficiency_and_Effectiveness_of_Inventory_Management_by_Optimizing_Supply_Chain_through_Enterprise_Resource_Planning_Technology/links/65097ba982f01628f03172_7b/Increasing-the-Efficiency-and-Effectiveness-of-Inventory-Management-by-Optimizing-Supply-Chain-through-Enterprise-Resource-Planning-Technology.pdf

Wei, J., & Ma, Y.-S. (2014). Design of a feature-based order acceptance and scheduling module in an ERP system. Computers in Industry, 65(1), 64–78. doi:10.1016/j.compind.2013.07.009

Weygandt, J., Kimmel, P., Kieso, D. (2018). Financial Accounting with International Financial Reporting Standards 4th Edition, Illustrated. John Wiley & Sons.

Kapsis, M., Brown, J. (2015). Conceptual Framework Elements of financial statements definitions and recognition. International Financial Reporting Standards. Retrieved from https://www.ifrs.org/content/dam/ifrs/project/conceptual-framework/webcast-2015/cf-webcast-5-pdf.pdf

Xolmirzaev U. A. (2020). FINANCIAL ASSETS AND IMPROVEMENTS OF THEIR ANALYSIS. "Экономика и социум" №1(68), 102-105. Retrieved from https://cyberleninka.ru/article/n/financial-assets-and-improvements-of-their-analysis





Lin, P. (2019). Design and Implementation of Financial Accounting Information Management System of Shipping Companies Based on ERP. Journal of Coastal Research, 470–474. https://www.jstor.org/stable/26853985

Law, J., Smullen, J. (2008). A Dictionary of Finance and Banking (4 ed.). Oxford University Press. ISBN-13: 9780199229741

Del Giudice, V., Manganelli, B., & De Paola, P. (2016). Depreciation Methods for Firm's Assets. Lecture Notes in Computer Science, 214–227. doi:10.1007/978-3-319-42111-7 17

Purnamasari, D. ., Almira, A. ., & Savira, N. D. (2021). The Accounting for Inventory from a Commercial Point of View. Research Horizon, 1(2), 81–85. https://doi.org/10.54518/rh.1.2.2021.81-85

Vakilifard, H., Meinagh, S. A., Khataee, M. R. (2013). Evaluating the Effects of ERP Systems on Performance and Management Accounting in Organizations. European Online Journal of Natural and Social Sciences 2013, 2(3), 2412-2426. I SSN 1805-3602.

APPENDICES



APPENDIX A

COMPUTER SCIENCE DEPARTMENT





Transcript of Interview





APPENDIX B

Organizational Chart





APPENDIX C

Company's Acceptance Letter



APPENDIX D

Relevant Source Code



APPENDIX E

Turnitin Result



APPENDIX F

Company Profile



APPENDIX G

Sample Forms



APPENDIX H

Software Acceptance Checklist

APPENDIX I

Evaluation Instrument Survey Form