IMPLEMENTATION OF AN ENTERPRISE RESOURCE PLANNING (ERP)-BASED WORKSHOP INVENTORY MANAGEMENT INFORMATION SYSTEM AT PT. ANUGRAH FAJAR REZEKI

Dewiyana[1*], Nurmalawati[2], Muhammad Abdul Rahman[3]
[1,2,3]Teknik Industri, Universitas Samudra, Kota Langsa – Aceh
Email: dewiyana@unsam.ac.id, nurmalawati@unsam.ac.id, muhammaabdul.rahman02@gmail.com
Korespondensi : dewiyana@unsam.ac.id

Abstract

PT. Anugrah Fajar Rezeki is a palm oil processing company located in Merbau Dua village, Birem Bayeun sub-district, East Aceh Regency. This research focuses on designing a *workshop inventory management information system* . This research aims to design a system that is integrated with the *workshop inventory management information system* using *Enterprise Resource Planning* (ERP) and implementing the ERP system. The conclusion of the research is that this *workshop inventory management information system* can help the company, where the previous company policy in recording goods management can only be done one by one manually so it takes a long time, after implementing the ERP system the data is easier to *input* and is immediately updated automatically for *real-time goods management* so it does not take a long time . In addition, the implementation of this *workshop inventory management information system* is very helpful in the process of collecting, managing data and making better decisions so as to increase efficiency, effectiveness, and development in operational processes at PT. Anugrah Fajar Rezeki.

Keywords : Information Systems, Inventory Workshop, Enterprise Resource Planning (ERP) , Digitalization, Website

Introduction

In today's modern era, with the use of extraordinary technological advances, where new discoveries and innovations are emerging at a very rapid rate [1] . A number of companies place a lot of trust in information system technology as a tool that can organize and optimize production processes efficiently. One *software* that plays an important role in combining various diverse company functions, with the aim of improving performance and efficiency in carrying out the company's operational stages is ERP [2] . In this digital era, companies seeking business success must embrace information technology as a strategic and essential element in their operations. Information technology is not just a tool, but also a key to winning the competition. Optimal use of information technology is key for companies to increase efficiency. Integrated information technology enables all companies/organizations to access information more easily for their users, resulting in faster, more accurate, and more efficient decision-making.

To achieve success in the digital age, companies need to adapt by implementing an ERP system. This system can integrate all aspects of a company's operations, resulting in integrated and well-coordinated system planning and development. By implementing ERP, companies can combine all their systems into a single, centralized *platform* . *This system integrates information and information-based processes through a single database* , enabling more efficient and effective communication and collaboration between departments/functional areas. Currently, PT. Anugrah Fajar Rezeki still uses several manual systems to manage various aspects of its operations, such as inventory management. Inventory in *the workshop* is done manually, with *stock records* of goods, such as *spare parts* , machines or other material components recorded by the *inventory manager* and calculated and written manually. This can lead to errors in recording, hinder efficiency, and increase the risk of losing important data or information. The *inventory management process* is also not well integrated, causing stock imbalances and difficulties in managing *inventory* . Therefore, a more integrated and efficient solution is needed for *inventory management* at PT. Anugrah Fajar Rezeki. ERP design is one potential solution to meet this need.

In the daily management *of workshop inventory* , the process of analyzing information for management decision-making and evaluating factory performance takes a significant amount of time. Disorganized storage of important company documents and archives causes problems in managing factory operations effectively. [3] , [4] Alignment between business operational processes and information technology implementation is a crucial factor that must be achieved so that all company resources can be utilized optimally. [5] . The role of information technology has become an integral competency that cannot be separated from a company's operational activities. One approach that can be applied to integrate various systems in a company is ERP. ERP is a method that can help companies improve operational efficiency, optimize inventory management, and facilitate more effective business processes by distributing information into two streams, namely internal information within business processes and information between business processes. [6] , [7] . By implementing an ERP system, companies can run their business digitally and in an integrated manner, thus enabling the optimization of resources and increasing overall productivity [8] .

Previous research, with the title Analysis and Design of Cloud- Based E- *Commerce Systems Enterprise Resource Planning* Using Odoo 14. The aim of this research is to analyze, design and Combining an e-commerce system *that is integrated with an inventory management system, a purchasing management system, and a sales management system in an e-commerce system using Odoo 14 software that supports Cloud ERP* , *so* that *the* system *can* be *run* optimally *and* can reduce inefficient operational costs. Based on the system design and results that have been carried out which have been integrated with ERP business process management stored in a *cloud system* , so that the e- *commerce system is easily accessed and integrated with other systems. In this study, a black box* testing method is used with several *test case parameters* / test classes. [9] . The next research, entitled Implementation of *Enterprise Resource Planning* (ERP) System in the MSME Sector. This research aims to develop and implement an ERP system in the business cycle that includes the purchasing, sales, and stock information management processes at DJS stores. The *prototype method* was used in this research. Based on the system design and the results that have been carried out, the ERP information system with *Purchase* , *Inventory* , and *Sales Modules* is able to overcome the problems that exist at DJS stores. [2] . Based on the problems that have been described, the author will conduct research entitled "Design of *Workshop Inventory Management Information System Using Enterprise Resource Planning (ERP)* Method at PT. Anugrah Fajar Rezeki".

Theoretical basis
A.   Understanding Information Systems
According to Rayon (2023), an information system is a process in which raw data is transformed and stored using the latest technology. This process aims to transform raw data into useful information that can be used by companies or organizations to make decisions. sound decisions. Thus, information systems play a vital role in facilitating the flow of information needed to support the daily operations and managerial activities of a corporate entity. Information systems not only function to manage routine transactions but also have a broader role in supporting the strategic activities of a company or organization. These systems collect, process, and present important reports needed by management to make decisions and formulate effective business strategies. [10] , [11] .

B.   Understanding Information System Design
process is a series of steps undertaken with the primary goal of meeting user needs . These steps are designed systematically and structured to provide a clear and comprehensive picture of the system to be developed. Furthermore, information systems design also aims to produce a complete and detailed design, which will later serve as a guide for programmers *in* developing and implementing the system. [12] , [13] .

C.   *Inventory*
In the corporate/business world, inventory *plays* a crucial role in the continuity of a company's operations. As stated by Mirajdandi (2024), inventory can be defined as a collection of goods or resources owned by a company for the purpose of storing and managing goods, components, *spare parts,* or for use in the production process and other operational activities. [14] , [15] .

D.   *Enterprise Resource Planning* (ERP)
According to Mazumdar (2016), an ERP system is a type of software that organizations use to manage and integrate their business processes and functions. [16] . Typically, ERP includes modules as in Figure 1.

Figure 1. Main Modules of the ERP System

ERP functions as a strategic instrument that benefits the internal organization. also has a positive effect on the entire business ecosystem and simplifies work processes in companies with complex concepts [17] as in Figure 2.
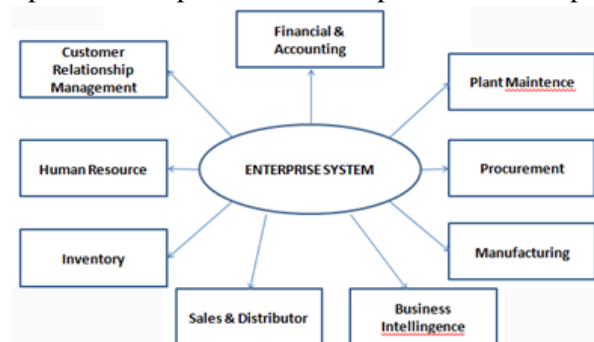

Figure 2. ERP System Concept

ERP offers four main benefits : (a) centralized, *real-time data management* . (b) better decisions based on accurate, up-to-date data . (c) ERP improves the efficiency and productivity of business processes, reduces operational costs, eliminates data redundancy , and saves time . (d) system automation increases a positive work ethic, reduces the possibility of fraud, and increases the company's competitiveness because [18] .

E. *Visual Studio Code*
Visual Studio Code is *a text* editor that offers a variety of advanced features to facilitate software development. [19] . Excellent features such as *Intellisense , Git* integration , *debugging facilities* , and the ability to be extended through extensions have made *VS Code* a favorite choice for application developers. This *text* editor natively supports *JavaScript* , *TypeScript* , and *Node.js.* However, its potential extends beyond these three languages.

F. **Understanding Work Efficiency**
According to Susilo (2020), efficiency is a condition or state in which work is completed correctly and utilizes all available capabilities [20] . Work efficiency is defined as the effort to utilize minimal input to obtain the greatest possible production output. This comparison is seen from:
1) From a time perspective, work efficiency is achieved when the output meets the expected quality standards and is performed in an optimal manner.
2) From a performance perspective, an employee's achievement in carrying out his duties, both in terms of quality and quantity, in accordance with the workload he carries, is referred to as a performance aspect.

Method
1. Type, Location , and Time of Research
The type of research used by the researcher is qualitative. This research was conducted at PT. Anugrah Fajar Rezeki, located in Merbau Dua Village, Birem Bayeun District, East Aceh Regency, and will be completed in June 2024.

2. Research Object
The object of this research is the inventory management *of the workshop* at PT. Anugrah Fajar Rezeki.

3. Research Variables

In this study, the independent variable is the manual *workshop inventory management at PT Fajar Anugrah Rezeki.* In this study, the dependent variable is the design of a *workshop inventory management information system.*

4. Conceptual Framework

The research framework is used for a scientific approach and to observe the relationships between variables in the analysis process. The conceptual framework in this study can be seen in Figure 3.
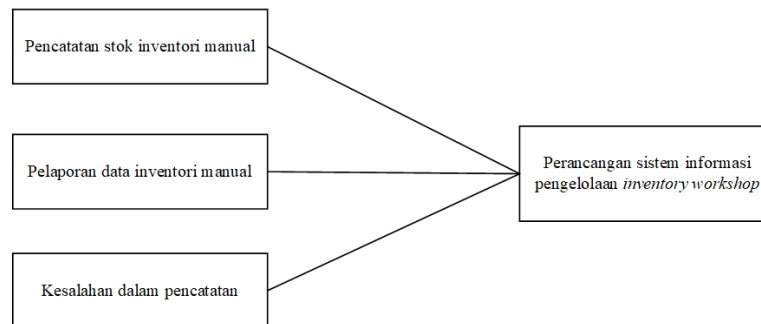

Figure 3. Conceptual Framework

5. Data Used

Primary data is data obtained directly through observation, interviews, *inventory management* , and report archiving. In this study, secondary data was obtained from literature studies, books, journals, and company records, including *inventory* management archives .

6. Method of collecting data

Data collection was conducted by directly collecting inventory data from the *workshop inventory section* , comprising archived inventory records and reports of items leaving the warehouse. The research object was the *workshop inventory management information system* at PT. Anugrah Fajar Rezeki. Interviews were conducted through interaction with the workshop head and managers involved in *workshop inventory management* .

7. Data Processing Techniques

Stock records of goods such as *spare parts,* components, and other goods materials, as well as outgoing goods reports and report data archives, will be entered into the ERP system to be designed . In this study, data processing uses the ERP method and *Visual Studio Code* as supporting *software* to create an information system design, which is then implemented in the company. The design of the information system is in accordance with the results obtained from the ERP results.

Results and Discussion
1. *Enterprise Resource Planning* (ERP) System Design

This research aims to design an integrated ERP system to manage *workshop inventory* at PT. Anugrah Fajar Rezeki . System design serves to comprehensively describe a system that has been designed by combining various separate parts into one strong and cohesive entity .
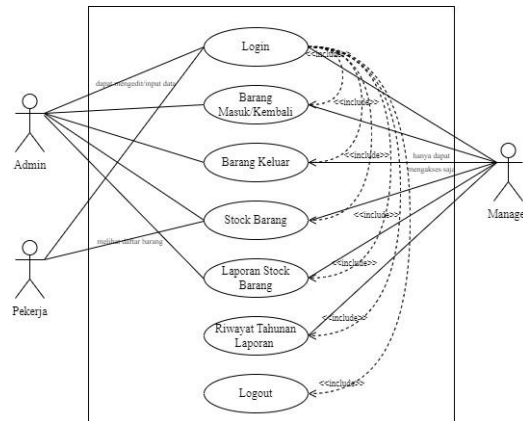
a. *Use Case* Diagram

Figure 4. *Use Case* Diagram

In Figure 4 As can be explained in an ERP system, the admin is the user with the most important role. They have full control over all access rights and data within the application. Processing information about goods movement includes inventory monitoring, recording incoming and outgoing goods, and accessing stock reports. Workers can only access and view inventory in *the workshop inventory* ; they can also find the items they need through the search feature . Managers have access to all menus, just like admins, but they cannot edit or input *workshop inventory data.*

b. *Class* Diagram

A *class* diagram is a *visual representation* that shows the structure and relationships between classes in an object -oriented system .
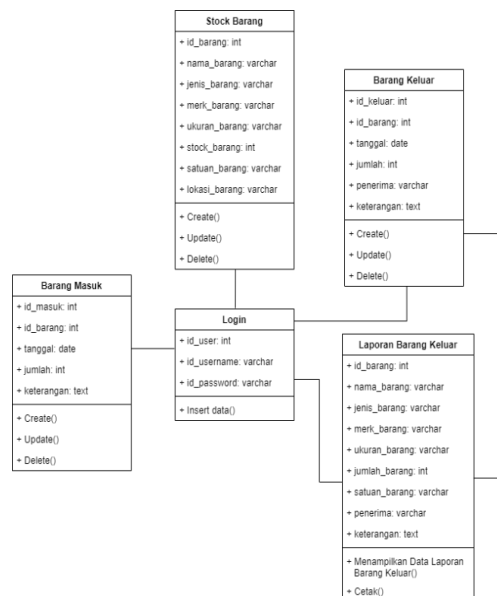

Figure 5. *Class* Diagram

Figure 5 illustrates the implementation of an Enterprise Resource Planning (ERP) system *designed to manage workshop inventory at PT. Anugrah Fajar Rezeki, showcasing a complex yet* well - integrated database structure . *The* visualization shows a number of interrelated tables, forming a network of interconnected and mutually supportive information.
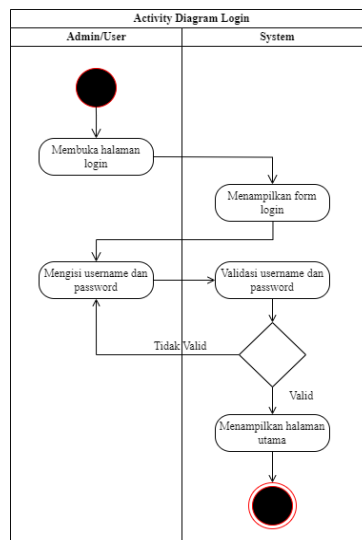
c. *Activity* Diagram

Figure 6. *Login Activity* Diagram

In the first step, *the admin/user* begins by opening the application. The application then displays the login page . After that, *the admin/user* enters their *username* and *password,* as shown in Figure 6. above . If the data is successful, the main menu is displayed by the system. If it fails, the system returns to the *login page* .
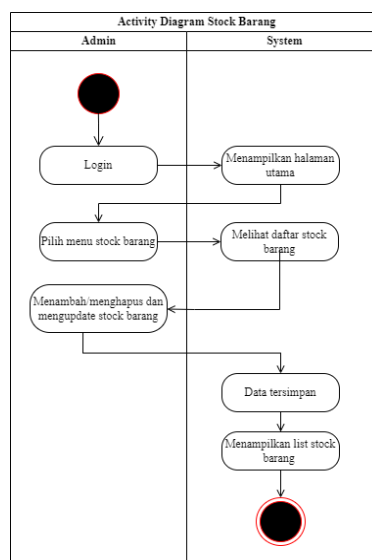

Figure 7. *Activity* Diagram of Goods *Stock*

In the second step, the admin logs into the application, and the system displays the main page, as shown in Figure 7 on the right. The admin selects the stock menu, views the list of stock items in the workshop inventory, and can then add/delete items, as well as update the stock, as shown in Figure 7 on the left. Afterward, the updated data entered by the admin is automatically saved in the system. The system displays the stock list, as shown in Figure 7 on the right.
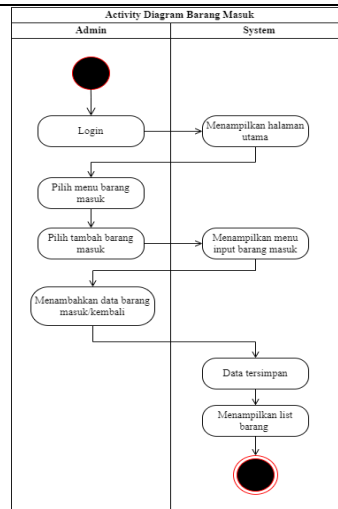
Figure 8. Incoming Goods *Activity Diagram*

In the third step, *the admin* logs into the application. The system then displays the main page, as shown in Figure *8* on the right. *The admin selects the incoming goods menu and selects "add incoming goods."* The system then displays the incoming goods data *input menu, where the admin* adds incoming/returned goods data. The data is then saved, and the system displays the incoming goods *list* created by *the admin* , as shown in Figure 8 on the right.
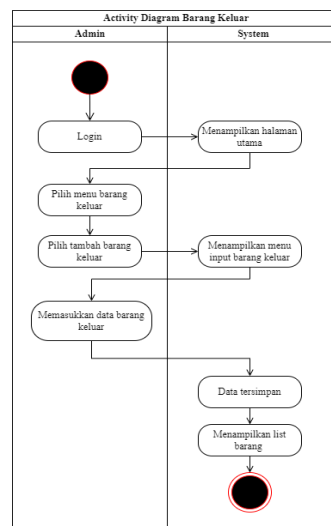
Figure 9. Outgoing Goods *Activity Diagram*

In the fourth step, *the admin* logs into the application. The system then displays the main page. *The admin selects the outgoing goods menu and selects "Add outgoing goods. "* The system then displays the outgoing goods *input menu. The admin* can enter data on outgoing goods, which the system stores. The system displays *a list of* items, as shown in Figure 9 on the right.
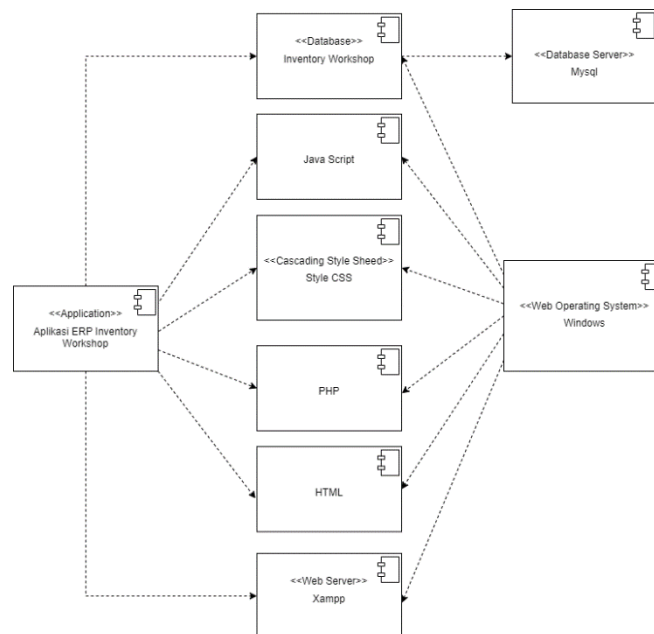
d.   *Component* Diagram

Figure 10. *Component* Diagram

Figure 10 shows the workshop's *web-* based *inventory* management system, using an ERP method using a MySQL database. This web application was developed using a combination of JavaScript , PHP, and HTML programming languages. CSS is used to enhance the visual elements of the interface in the web page design. XAMPP currently serves as *the web server* for running this application.
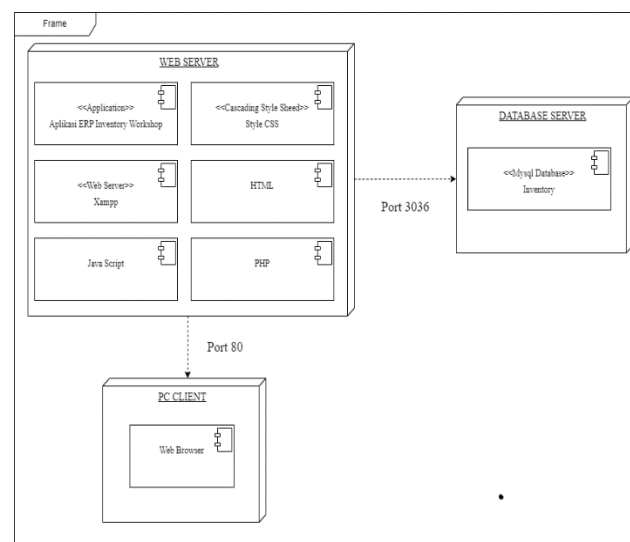
e.   *Deployment* Diagram

Figure 11. *Deployment* Diagram

In Figure 11 above, the *workshop inventory ERP system* consists of various components integrated in one folder. These components include *the XAMPP web server* that stores programming language *files such as JavaScript* , *CSS* , *HTML* , and *PHP. The* system database uses *MySQL* , which can be managed through *PHPMyAdmin* . The system runs locally (*offline*) over a local network. The main purpose of this system is to systematically and efficiently optimize *workshop inventory management* . The use of various state-of-the-art web technologies enables a responsive and easy-to-use interface. Data security is also a priority with the implementation of a strict user authentication

system. In addition, this application supports the generation of *inventory reports* to assist management decision-making.

2. Implementing *an Enterprise Resource Planning* (ERP) System

After the design is complete, the results will be implemented in the form of a website. Several page views will be generated, starting from (a) the login page, (b) the main stock page, (c) the worker account page, (d) the manager account page, (e) the incoming goods page, (f) the outgoing goods page. The visualization can be seen in Figure 12.
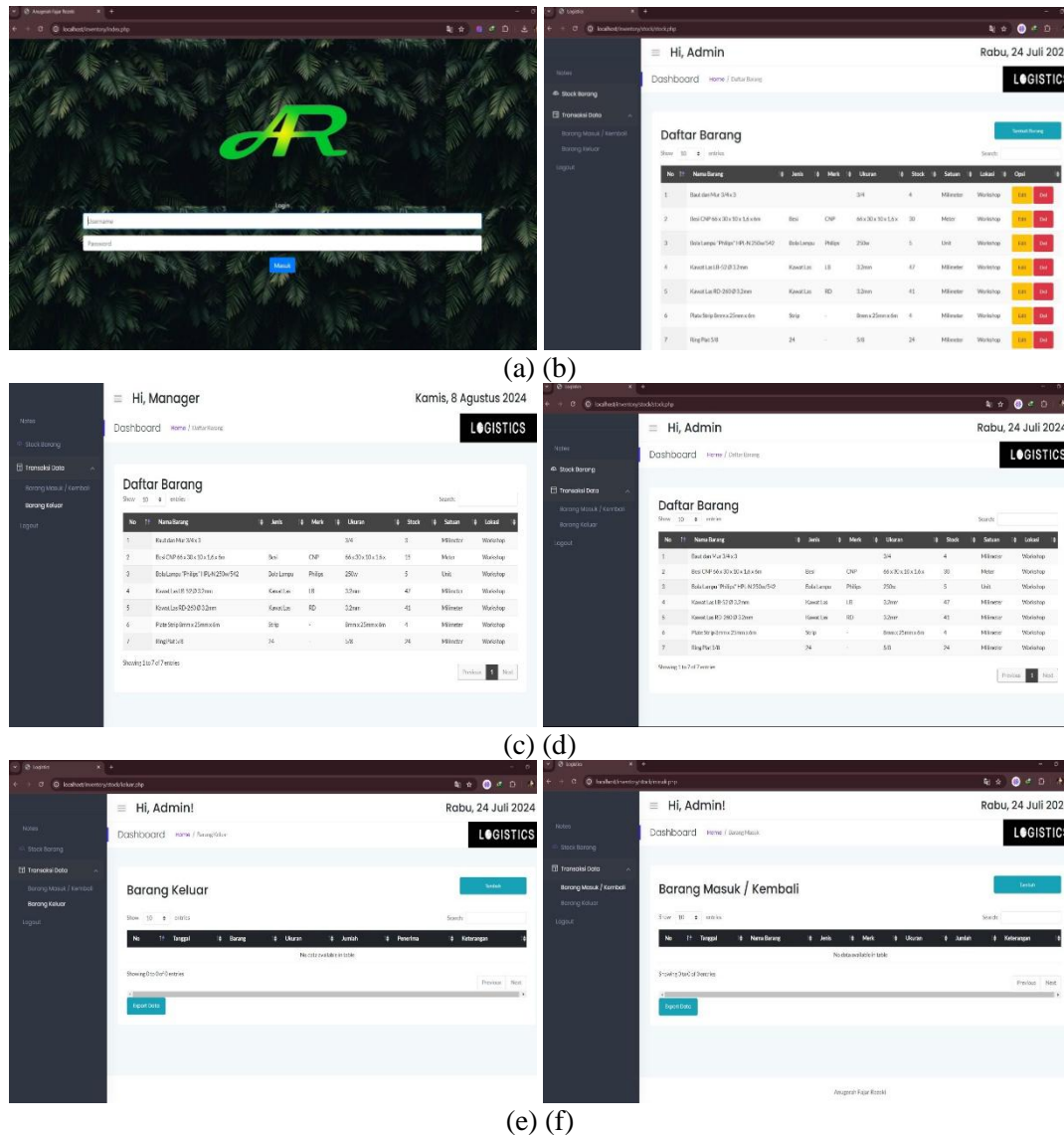

(a) (b)

(c) (d)

(e) (f)
Figure 12. Implementation Results Page Display

3. Testing Systems that Have Been Designed

In system testing, researchers used a modified GAP analysis to compare the business processes required to achieve the targets with the processes before and after system implementation. The purpose of this analysis is to determine how well the workshop inventory management ERP system meets the needs and operations of PT. Anugrah Fajar Rezeki. To achieve this goal, the NPF method is used based on Nugroho (12), namely, 1. N (No Fit) which indicates the system cannot meet the needs; 2. P (Partial) the system can meet the needs, but only partially; 3. F (Full) the system can meet the needs as a whole.

Table 1. Results of the Simulation Testing of the Designed ERP System

No.	Business Process	Need	*Fulfillment*			Information	
			N	P	F	System Manual	System ERP
1	Recording Stock of goods	Have data/information Which complete And details about stock goods			☐	The system for recording lists related to stock of goods is still done manually (using a bookkeeping system).	Recording and inputting stock data can be faster, more effective and efficient .
2	Recording Incoming goods/ Return	Can become Connector between *Inventory* with all station Which It is in factory.			☐	Recording incoming/returning goods can only be done one by one, so it takes a long time.	Ensure it is systematic so that the data is more easy to input and direct updated with automatic For data stock goods in real-time.
3	Recording Exit item	Related to charcoal go out from inventory workshop			☐	Regarding the remaining stock of goods and outgoing goods are still done manually using an notebooks Microsoft Excel.	Remaining input stock of goods is done automatically by a system that is connected to each other each other. So the admin only needs to add exit item that is in the system
4	Report Expenditure Goods Go out	Company have information that details regarding data stock goods And data goods go out related manufacturing report .			☐	Outgoing goods expenditure reports are still done manually in books and Microsoft Word.	Automatic reports are generated and can be printed directly from the system. All data that there is a will be automatically saved.

Conclusion

    workshop inventory management information system design can help PT. Anugrah Fajar Rezeki in better managing *inventory* and increasing efficiency, performance, and productivity within the company. This application has three different user access levels, allowing admins, workers, and managers to operate the system according to their respective tasks and responsibilities. This organized access structure ensures more organized and controlled company *inventory management.* Test results from the designed ERP system demonstrate that it can manage *workshop inventory* better than before, increasing efficiency, effectiveness, and development in operational processes at PT. Anugrah Fajar Rezeki. Furthermore, this system significantly assists in data collection and management, and can assist the factory in making better decisions.

REFERENCES

[1]   E. Hadinata and L. Liyani, "Perancangan Sistem Enterprise Resource Planning (ERP) Inventory di Toko Bangunan Sederhana Mandiri Jaya Sejahtera," *Indones. J. Comput. Sci.*, vol. 2, no. 2, pp. 104–110, 2023.

[2]   M. N. Azizah and others, "Penerapan sistem enterprise resource planning (ERP) pada sektor UMKM," Universitas Narotama, 2024.

[3]   N. Ilmi *et al.*, *Manajemen Produksi*. Penerbit NEM, 2025.

[4]   V. A. Munawaroh and N. Latifah, "Pelatihan Workshop Sistem Informasi Pengelolaan Data Barang Masuk dan Keluar Berbasis Web pada CV Patriot Kencana Medika Kudus," *Abdimas Toddopuli J. Pengabdi. Pada Masy.*, vol. 7, no. 1, pp. 42–60, 2025.

[5]   M. A. A. Fathurohman, G. C. Pamuji, and Y. Y. Kerlooza, "Model Perencanaan Strategis SI/TI dan Pengukuran Keselarasan Strategi Bisnis dan TI: Pendekatan Berbasis Framework Ward Peppard dan SAMM pada PT. TWL: Pendekatan Berbasis Framework Ward Peppard dan SAMM pada PT. TWL," *J. Tata Kelola dan Kerangka Kerja Teknol. Inf.*, vol. 11, no. 1, pp. 69–78, 2025.

[6]   S. Alwan and M. A. Fahmi, "Implementasi sistem ERP pada divisi rantai pasok PT. Pindad (Persero)," *J. Kewirausahaan, Akunt. Dan Manaj. Tri Bisnis*, vol. 5, no. 2, pp. 139–148, 2023.

[7]   S. A. Wahdiniawati *et al.*, "Enterprise Information System," 2023, *Get Press Indonesia*.

[8]   E. H. Hermaliani, S. Solichatun, N. F. Elmyawan, M. I. Arfandi, and Y. Oktapiansyah, "Implementasi Enterprise Resource Planning Modul Purchasing, Sales Dan Inventory Menggunakan Odoo Pada PT. Sukacita Kokoh Bersama," *IMTechno J. Ind. Manag. Technol.*, vol. 4, no. 2, pp. 84–92, 2023.

[9]   M. F. Mulya and N. Rismawati, "Analisis dan Perancangan Sistem E-Commerce Berbasis Cloud Enterprise Resource Planning Menggunakan Odoo 14," *J. SISKOM-KB (Sistem Komput. Dan Kecerdasan Buatan)*, vol. 5, no. 1, pp. 57–65, 2021.

[10]   F. Soufitri and others, *Konsep sistem informasi*. PT Inovasi Pratama Internasional, 2023.

[11]   P. Caroline and L. Abdillah, "Implementasi Inventory Menggunakan Sistem ERP Ginee pada Toko Online Sembilan Nine Shop," *KALBISIANA J. Sains, Bisnis dan Teknol.*, vol. 9, no. 3, pp. 472–477, 2023.

[12]   N. Azis, "Analisis Perancangan Sistem Informasi," 2022.

[13]   N. Y. Arifin *et al.*, *Analisa Perancangan Sistem Informasi*. Cendikia Mulia Mandiri, 2022.

[14]   C. Cherlina and N. Auriel, "Sistem Informasi Pada Puskesmas Basuki Rahmat Berbasis Website," Institut Teknologi dan Bisnis PalComTech, 2024.

[15]   K. Mulyadi, "Sistem Informasi Manajemen Inventori Bahan Baku Di Cv. Cakra Linjaya," Universitas Komputer Indonesia, 2023.

[16]   \cSahika Ero\uglu and T. Çakmak, "Enterprise information systems within the context of information security: A risk assessment for a health organisation in Turkey," *Procedia Comput. Sci.*, vol. 100, pp. 979–986, 2016.

[17]   Y. Kustiyahningsih, F. Irhamni, and L. Suciningtyas, *Enterprise Resource Planning (ERP) Konsep, Aplikasi dan Implementasi Sistem ERP*. Media Nusa Creative (MNC Publishing), 2025.

[18]   E. R. Mahendrawathi, *Sistem Enterprise: Konsep dan Implementasi*. Penerbit Andi, 2023.

[19]   A. Febiola, "Perancangan Pembuatan Company Profile Berbasis Website Menggunakan Html \& Css Dengan Code Editor Vscode Sebagai Media Promosi dan Transparansi Informasi Keuangan Pada CV Adjie Jaya," Universitas Muhammadiyah Metro, 2024.

[20]   S. Syam, "Pengaruh Efektifitas Dan Efisiensi Kerja Terhadap Kinerja Pegawai Pada Kantor Kecamatan Banggae Timur," *J. Ilmu Manaj. Profitab.*, vol. 4, no. 2, pp. 128–152, 2020.