Design And Construction Of A Website-Based Digital Printing Product Marketing System

Ahmad Wilda Nur Fajri[1*], Tutik Khotimah[2], Ahmad Jazuli[3]

[1,2,3]Informatics Engineering, Muria Kudus University, Kudus, Indonesia
[*] Corresponding Author:
Email: 202151204@std.umk.ac.id

Abstract*.*

The Web-Based Sales Information System at Inenndo Konveksi Printing is a modern solution for managing sales processes and data management in the printing industry. With increasing customer demand for printing services, the need for an efficient and integrated system is becoming increasingly important. This study aims to develop a web-based sales information system that enables Inenndo Konveksi Printing to improve operational efficiency, expand market reach, and enhance customer satisfaction. The system development method uses a web-based software development approach and a literary methodology using the waterfall method through the stages of system design requirements analysis, implementation, testing, and maintenance, with the Larafel framework. Various key features have been implemented in the system, including product management, online ordering, order tracking, inventory management, and sales reporting. Integration with an online payment system allows customers to make payments easily and securely. System evaluation was conducted through functional testing and collecting feedback from users. The evaluation results show that this system successfully meets the business needs of Inenndo Konveksi Printing and helps improve their operational efficiency. Customers also provided positive feedback regarding the system's ease of use and a pleasant online shopping experience. Overall, this Web-Based Sales Information System significantly improves Inenndo Konveksi Printing's business performance and strengthens its position in the competitive printing market. With the right technology, printing companies can leverage the full potential of web-based information systems to optimize their operations and meet evolving market demands.

Keywords*: Sales Information System; printing and Laravel.*

I.   INTRODUCTION

Research The development of information technology encourages every agency or company to keep abreast of its developments, especially regarding the development of information technology related to the company's activities. The development of information technology has made a significant contribution to improving business activities, especially in terms of data processing that supports business decision-making and makes a significant contribution to improving service activities. Based on the description above, the use of information technology in a business activity is quite important. Currently, many companies have utilized websites to further introduce their products or the existence of their company to the wider community. The printing company opened in 2011, which is engaged in manufacturing services such as plain t-shirts, school uniforms, banners, calendars, invitations. Inenndo Konveksi Printing still has shortcomings in its sales system.Currently the sales system that is taking place at Inenndo Konveksi Printing is that every buyer must come to the store directly to make a purchase transaction for goods, this is related to the inefficiency of the relatively large amount of costs and also limited space.

In the sales transaction process it is still manual or still using handwriting which results in a long sales transaction process being carried out, while the creation of reports and data storage has not been well organized resulting in the accumulation of sales transaction data, in addition there is no good promotional media used to provide information about the existence of Inenndo Konveksi Printing. Knowing the importance of the above, the support of a fast and accurate information system is also very much needed, therefore to overcome this problem the author uses a Web-based programming language, because with Website-based programming, it can connect several local networks in a Region or even in a Country, and the information displayed is easier to update so that it can reduce the cost burden and time efficiency. With the

new system, it is hoped that it can meet every demand, both the demands of current needs and the demands of future developments and also provide solutions to existing problems in Inenndo Konveksi Printing.

Related Research

The first research was conducted by (Soegoto & Ma'wa, 2020) from the Indonesian Computer University with the results of their research successfully creating a website that can provide detailed and accurate information about the products sold as a promotional tool at Ridho Aulia's printing company.The second research was conducted by (Siregar, 2018) from the Computer Engineering Department of the Indonesian Business Polytechnic, North Sumatra with the title Website Design as a Media for Promotion and Product Sales. He succeeded in creating a website that can expand the scope of promotion because it is web-based and can be accessed in various places and regions and makes it easier for consumers to choose products because this website is equipped with detailed product information facilities.The third research was conducted by (Handayani, 2018) from STMIK Nusa Mandiri Jakarta with the research title Designing an E-commerce Based Sales Information System at the KUN Jakarta Store, which succeeded in creating an e-commerce based Information System that can make it easier for consumers to order.

The fourth research was conducted by (Aryanto and Irianto, 2012) from the Faculty of Informatics Engineering, Surakarta University with the title "Disposal of Online Sales Systems at the Indah Jaya Furniture Store, Surakarta", which succeeded in creating a website so that customers can directly see new products so they can make purchases directly without having to come directly to the store..Related research conducted by Ade Christian with the titleDesign of a Web-Based Home Sales Information System using the PHP programming language so that the website can run dynamically, supported by a MySQL database. The research aims to create a web-based communication tool to make it easier to promote and sell something, especially in home sales. The advantages of this system compared to systems that have been designed in previous studies are that the application has a better appearance, more features such as portfolio, team, service, and has 2 user levels, namely admin and cashier.

Theoretical basis

Point of Sale (POST)

*Point of Sale*Point of Sale (POS) is a sales-focused activity and a system that assists in the transaction process. Each POS consists of hardware such as a terminal or PC, a receipt printer, a cash drawer, a payment terminal, and a barcode scanner, as well as software such as inventory management, reporting, purchasing, customer management, standard transaction security, and returns processing. POS is important in the business world because it functions as a terminal for receiving payments from customers to merchants, which is a revenue indicator for businesses.(Marisa and Yuarita, 2017).

Website

*Website*A web page is a form of electronic publication media consisting of web pages connected to each other through links embedded in text or images. Tim Berners-Lee first created the website in 1990 using HTML (Hypertext Markup Language) and the HTTP communication protocol, which is located at the application layer of the OSI model. To access a website, users use software called an internet browser.(Feri Efendi, 2017).

E-commerce

*E-commerce*is a subset of e-business that focuses on online buying and selling transactions. E-commerce as a whole encompasses various business activities supported by information technology, such as customer service, business collaboration, and internal management. These processes are interconnected and operated through an integrated system (Yusuf et al., 2022).

Perl Hypertext Preprocessor (PHP)

*Perl Hypertext Preprocessor*PHP is a programming language used to create web pages with customizable content. This language runs on the server, meaning the computer that stores the website, and can interact directly with HTML. Therefore, every time someone opens a web page created with PHP, it is regenerated based on the latest data on the server.(Nilfaida et al., 2021)

MySQL

MySQL is a highly sophisticated digital data storage system. We can store, search, and modify data using a special language called SQL. MySQL is very popular because it's easy to use and can handle multiple data requests simultaneously.(Rianto Sitanggang et al., nd).

Waterfall

*Waterfall*The waterfall model, also known as the "waterfall" model, is a traditional approach to software development. The process is like water flowing from top to bottom, passing through several predetermined stages. Each stage has a different task and purpose, and the results of one stage feed into the next.(Hidayatullah et al., 2022).

UML (Unified Modeling Language)

UML is a standard visual language used for the detailed design of object-oriented systems. UML provides various types of diagrams that help illustrate the structure, behavior, and interactions within a system. Commonly used diagrams include use case, activity, sequence, class, and deployment diagrams. UML makes system design more systematic, easier to understand, and simplifies the implementation process.(Yoga et al., 2021).

Laravel

*Laravel*Laravel is a popular open-source framework among web developers globally. It was designed to simplify the process of creating web-based applications using the PHP programming language. It offers a number of key features, such as a template engine, routing system, and modular architecture. Compared to native PHP, Laravel offers advantages in terms of neat file structure and orderly code writing.(Hadinata et al., 2024).

II.   METHODS

Data Collection Techniques

In this study, data collection techniques used qualitative methods through direct observation and interviews. Observations were conducted by observing the transaction process at Karunia Store. Researchers observed how the owner handled various activities, such as processing inventory data and transactions with customers, which were still carried out manually. Furthermore, a direct interview was conducted with the owner of Karunia Store, Mr. Tugiman. Through this interview, information was obtained regarding obstacles encountered during the sales process and the need for a POS system to support store operations.

Waterfall System Development Method

The research method used includes application design. In the design phase of this website-based POS system, the Waterfall method was used, which is one of the approaches in the System Development Life Cycle (SDLC). SDLC is a frequently used approach in system design due to its systematic structure.[5]Each stage is carried out in stages so that the results of one stage become the basis for the next stage. Figure 1 below shows the stages in the waterfall method:
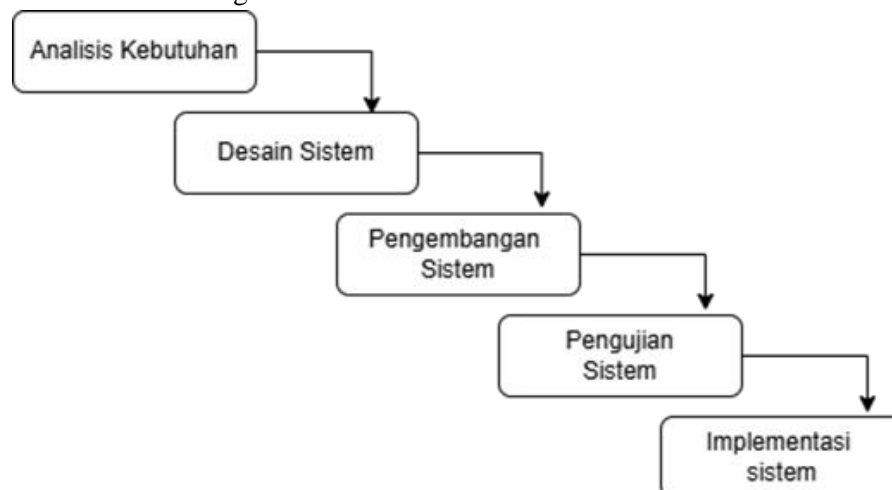

Fig 1. Waterfall Method

1. Needs Analysis

    Data was collected through observations and interviews with the owner of the Karunia shop. At this stage, a system requirements analysis will be conducted through direct interviews with the owner of the Karunia shop to obtain the data needed for designing the POS system. The results of these interviews will then be used to identify various functional and non-functional requirements in the system to be developed. Functional requirements include product data processing, transactions, and sales reports. Non-functional requirements include security, ease of use, and system performance. All of these analysis results will form the basis for the next design stage.[6]

2. System Design

    At this stage, the design is carried out based on the results of the previous needs analysis. The system design begins with the use of Unified Modeling Language (UML) to describe the features and interactions within the system, including use case diagrams to show user interactions with the system, activity diagrams to explain the flow of activities, and sequence diagrams to show the sequence of interactions between objects. This stage also includes the creation of a User Interface (UI) in the form of a mockup that includes the dashboard display, category pages, product pages, transaction pages, and other pages needed in the POS system.

3. System Development

    The system development phase was based on a previously created design, using the PHP programming language and MySQL as the database, along with the Laravel framework. Laravel was chosen for its supporting features for application development, such as Laravel Breeze for system authentication and the Blade Template Engine for the interface. On the UI side, the system was designed using a combination of Bootstrap as the CSS framework and JavaScript for a more responsive display.[7]

4. System Testing

    After the application is developed, testing is carried out using the Black Box Testing method to ensure that the application meets user needs and that all functions function properly. Black Box Testing is performed by examining input and output without examining all internal system processes. This testing focuses on core functions such as login, product data processing, sales transactions, and other system features. Test results are presented in a table containing information such as test scenarios, expected outcomes, test results, and conclusions for each feature.[8]Through this method, it is expected that the system responds to the input correctly in its entirety.

5. System Implementation

    To ensure the POS application is ready for use by users, system training is required for relevant users on how to operate the system. This training also serves as a trial run to ensure the system requirements at Toko Karunia meet the owner's expectations. The tools used to run this POS system are the Google Chrome browser, XAMPP as the local host, and MySQL as the database.

III. RESULT AND DISCUSSION
Design

In the design phase of the Web-Based Sales Information System Application at Inenndo Konveksi Cluwak Pati, several important aspects were identified to optimize the sales process and data management within the convection company. With a focus on digital printing services, this application allows Inenndo Konveksi printing to easily explore a variety of digital printing products and place orders online, track status in real-time, record each transaction, and automatically generate sales stock reports. This system is developed as a responsive website application with a simple yet functional interface. The goal is to simplify buying and selling for customers outside the Pati area. Therefore, it includes clear instructions to ensure users can understand and operate the system easily.In designing a web-based digital printing product sales information system at Inrnndo Konveksi, MySQL was used as the database to identify the required tables. This system allows the product sales process to be more structured, efficient, and well-documented. This not only speeds up purchasing times but also helps customers select items, allowing them to do so in real time,

rather than waiting for a response from the store admin via WhatsApp.This design uses UML to design a detailed object-oriented system. Some diagrams used in this design include Usecase Diagrams that describe the main functionality from a user perspective, such as registration, login, viewing products, ordering, and providing reviews. Activity Diagrams, to explain the user flow from placing an order to payment. Sequence Diagrams, which show the sequence of communication between actors and the printing product ordering process system.

A. *Use case*Diagram
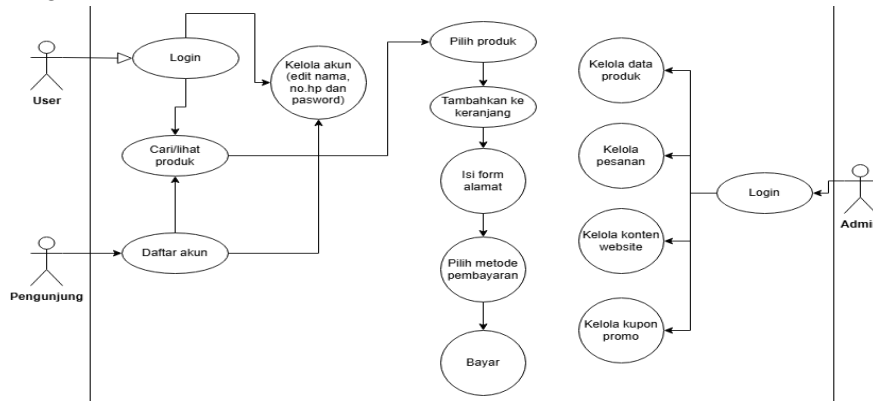
Fig 3. Usecase Diagram

The use case diagram above illustrates the interaction between actors and the system. There are two main actors: User and Admin. The User actor has several use cases, such as registering an account, logging in, searching for or viewing products, selecting products, and adding products to the cart. Afterward, the user can fill out the address form, select a payment method, and make a payment.

B. *Activity* Diagram

1. *User*view product catalog
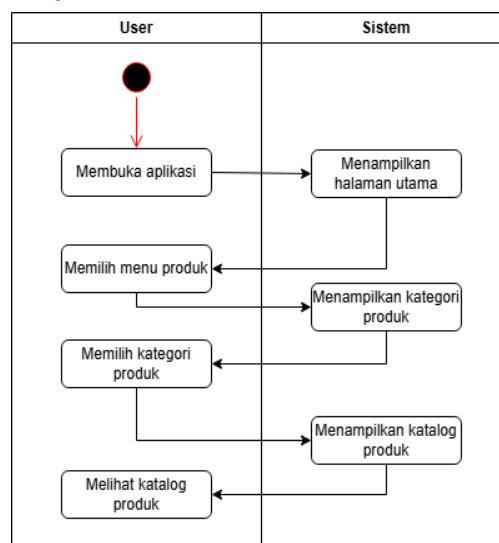
Fig 4. Activity Diagram User Viewing Product Catalog

This diagram illustrates the user activity flow when searching for products through an e-commerce application. The process begins when the user opens the application, and the system automatically displays the main page. Next, the user selects the product menu, which directs the system to display a list of product categories and wood types. After the user selects a specific product category, the system responds by displaying a product catalog based on the selected category or wood type.
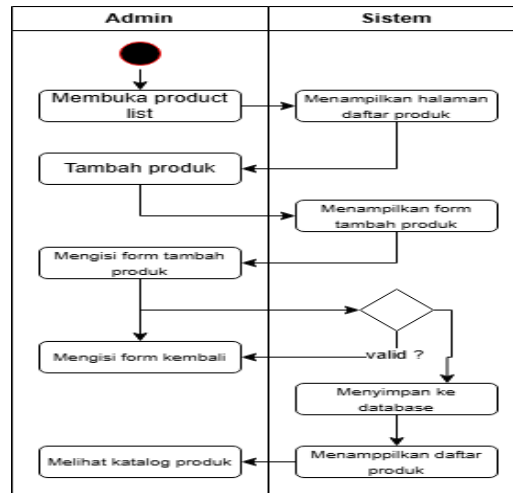
2. *Activity Admin* add product

Fig 5. *Activity Diagram Admin Adds Product*

This activity diagram illustrates the flow of activities carried out by the admin in the process of adding a new product to the e-commerce system. The process begins when the admin opens the product list, then the system responds by displaying a page listing the available products.

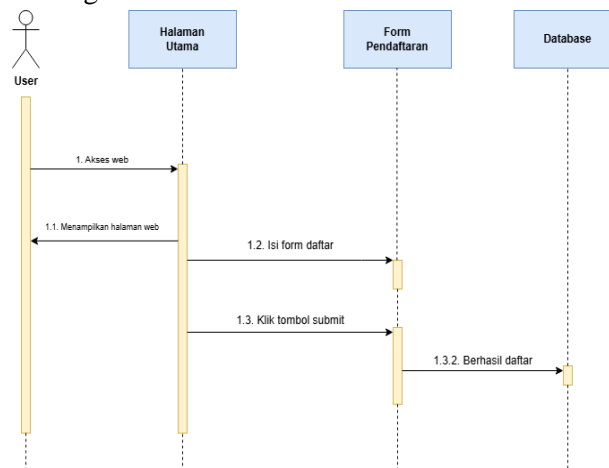C. *Sequence* Diagram

1. *Seauence* Register Diagram

Fig 6. Sequence Diagram Register

*Sequence*This user registration process diagram for an e-commerce system shows the sequence of interactions between the user, the main page, the registration form, and the database. The process begins when the user accesses the main page and selects the "Register" menu, which directs them to the registration form. There, the user enters data such as name, email address, password, and phone number. Once the form is completed and the register button is pressed, the data is sent to the system for validation.
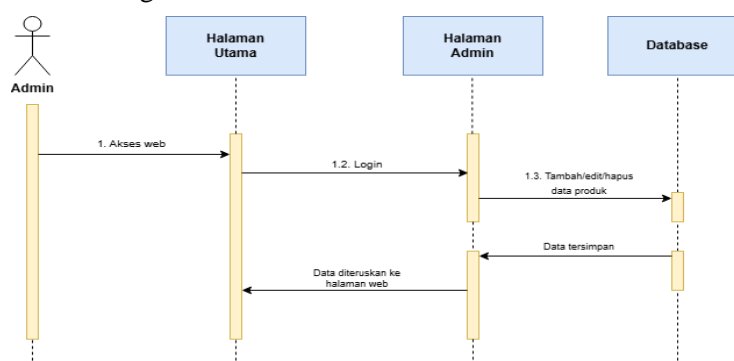
2. *Sequence*Admin Diagram

Fig 7. *Sequence Diagram Admin*

*Sequence*This diagram illustrates the admin login process and access to the admin dashboard. The process begins when the admin accesses the main page, selects the login option, and enters their email address and password. From this page, the admin can manage data such as products, orders, website content, and more, depending on their access rights.
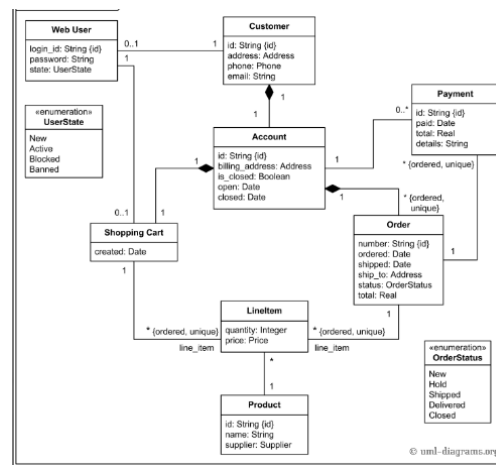
D. *Class* Diagram

Fig 8. *Admin Class Diagram*

A Class Diagram depicts a static structure visually displaying classes (such as Customer, Product, Basket, Production, and various reports), attributes of each class (e.g. product_code, qty, date), and relationships between classes (e.g. one Customer can have many Basket entries, one Product appears in many Productions and reports), thus facilitating the understanding of object-oriented design, documentation, and implementation in system development.

System Implementation

1. System Explanation

The following is a display of the interface of the Web-based digital printing product marketing system at Inenndo Konveksi. This process uses Visual Studio Code as an Integrated Development Environment (IDE) to describe the program codes. The programming language used is PHP, with MySQL as a business data system to store and manage sales information, inventory, and customer data. This website was built using Laravel version 8, a reliable and modern PHP framework, which provides a robust structure and complete tools for the development of this cashier application.
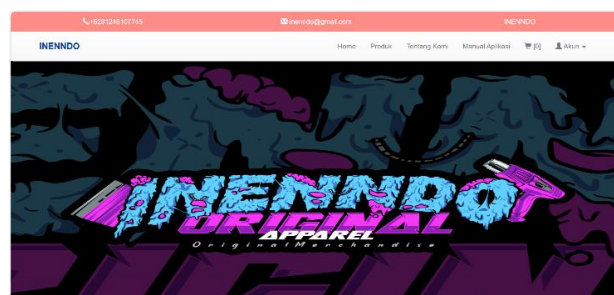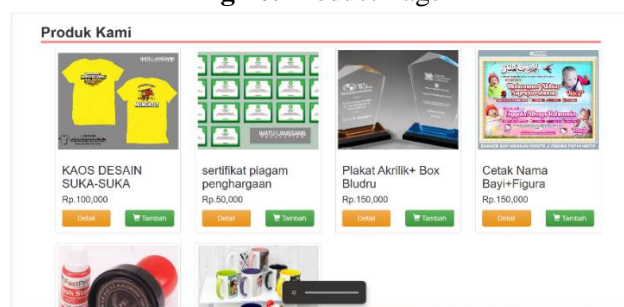

Fig 9. Application / System page

Figure 9 shows the web-based digital printing product marketing system application page. This page displays the customer dashboard. The page design is simple, responsive, and clear.
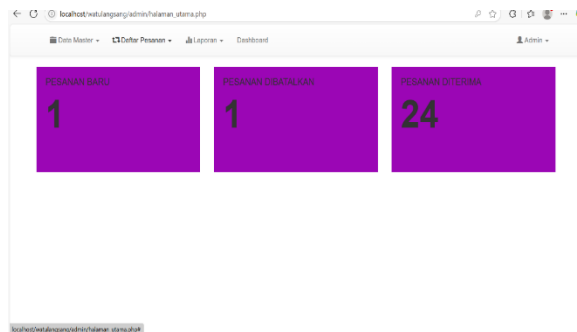
Fig 10. Product Page

Figure 10 displays the product page offered on the web-based digital printing product marketing system. In this display, customers can see a complete list of products, such as the type of goods and prices.

Fig 11. Admin Dashboard Page

On this page in Figure 11, the admin can see new orders, canceled orders, and accepted orders. There are several features, including master data, which includes product and customer master data, order data, and sales reporting.

Fig 12. Product Master

Figure 12 displays the product master page in this system. Admins can add multiple items, including product code prices, product names, and photo files. They can also delete items no longer sold in the digital printing product marketing system at Inenndi Konveksi. This feature allows admins to organize content in a more organized and structured manner, making it easier for users to access relevant information.

Fig 13. Order List

Figure 16 displays the customer order list page on the web-based digital printing marketing information system. In this feature, the admin can see newly received orders and the admin can choose to accept or reject the order.

System Testing

Blackbox testing conducted by the owner of Inenndo Konveksi on the Web-Based Digital Printing Product Marketing system at the Inenndo Konveksi printing company is the initial stage in the software testing cycle that focuses on testing the functionality, performance, and security of the system without paying attention to internal details or code structure. This aims to ensure that the system functions according to predetermined specifications without paying attention to its internal workings. The internal development team will then conduct further testing in the internal environment to validate the features, modules, and system integration based on the results of previous Blackbox testing. This testing can be seen in table 1 as follows.

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Table1. Black Box Test Results

No	Process Design	Results	Status
1	*Login form* -fill in username and password	Succeed	Valid
2	*Form*transaction/order input	Succeed	Valid
3	*Form*input menu list -fill in the menu name, select the category, address, telephone number, select the item,	Succeed	Valid
4	Files in JPG/PNG format	Succeed	Valid
5	*Admin login form* -fill in username and password	Succeed	Valid
6	*From input*orders, cancellations, and production	Succeed	Valid
7	*From input goods, and input customer accounts*	Succeed	Valid
8	*From input*inventory stock	Succeed	Valid
9	*From input*sales report, profit report, turnover report, cancellation report, and production report	Succeed	Valid

IV.   CONCLUSION

From the results of the previous discussion, there are several problems that can reduce the effectiveness and efficiency in carrying out the series of processes that exist in the Inenndo Konveksi printing company. By building this Inenndo Konveksi web application, several conclusions can be drawn, namely:

1. This sales information system is expected to help in managing sales transactions and inventory data.
2. This sales information system is expected to increase sales.
3. With this application, it is hoped that it will be possible to manage data archiving in a computerized manner, namely an application that has an integrated database as a medium for ordering transactions.
4. The implementation of this sales information system is expected to help introduce Inenndo Konveksi printing and become a promotional media to provide information about Inenndo Konveksi Printing to the wider community.

REFERENCES

[1]   Aulya, Diana. "Factors Related to Job Stress in Traffic Police at the Central Jakarta Metro Police from April to August 2013." (2013). Hidayatullah, D., & Ardiansah, T. (2022). Web-Based Futsal Field Service Reservation and Facility Rental Information System Using the Waterfall Method. *Journal of Technology and Information Systems (Jtsi)*, 3(3), 64–68. Retrieved From Http://Jim.Teknokrat.Ac.Id/Index.Php/Jtsi

[2]   Efendi, T. Feri. "Website Development of State Vocational High School 3 Sukoharjo." National Seminar on Information Systems. Vol. 2017. 2017. Qodrunida Lailatul Arafah, H., & Tyas Catur Pramudi SSi, Y. (nd). Online Furniture Sales Information System At Kencana Jati Raya Shop Semarang.

[3]   Fikri, Ak, Hamdani, Au, Nofiyani, N., & Hayati, P. (2025). Implementation Of Content Management System-Based E-Commerce With The Waterfall Method For Digital Product Promotion. *Jiki (Journal Of Computer Science And Informatics)*, 6(1), 37-46.

[4]   Handayani, Sutri. "Designing An E-Commerce-Based Sales Information System: A Case Study Of The Kun Jakarta Store." *Ilkom Scientific Journal* 10.2 (2018): 182-189.

[5]   Irianto, Tri Tjendrowaseno; Aryanto, Arip. Development Of An Online Sales System At The Indah Jaya Furniture Store. *Journal Speed-Sentra Penelitian Engineering Dan Edukasi. Surakarta*, 2012, 4.4. Nilfaidah, N., Sa'ban Miru, A., & Lamada, M. (2021). Development Of A Realtime Student Attendance System Using Php, Mysql, Sms Gateway, And Codeigniter Framework.

[6]   Marisa, Fitri, and Titania Grawidi Yuarita. "Designing a web-based point of sales (POS) application using the system development life cycle method." *Journal of Information Technology and Management* 3.2 (2017).

[7]   Musthofa, N., & Adiguna, MA (2022). Designing a Web-Based Computer Spare Parts E-Commerce Application Using CodeIgniter at Dhamar Putra Ccomputer, Tangerang City. OKTAL: *Journal of Computer Science and Science*, 1(03). Retrieved from https://journal.mediapublikasi.id/index.php/oktal

[8]   Pramarta, IGBR, Pradipta, GA, Liandana, M., & Kom, S. (2024, October). Website-Based Marketing Information System at UD. Bagus Ayu. In Informatics and Computer Research Results Seminar (SPINTER) | STIKOM Bali Institute of Technology and Business (Vol. 1, No. 3, pp. 149-154).

[9]   Sania, Y., Khairil, K., & Sallaby, AF (2024). Design and Construction of a Web-Based Printing Service Product Ordering System at CV. Fajar Advertising. *Infotama Media Journal*, 20(2), 448-454.

[10]   Soegoto, ES, & Ma'wa, LF (2020, July). Analysis of the effects of web-based information systems. In IOP Conference Series: Materials Science and Engineering (Vol. 879, No. 1, p. 012123). IOP Publishing**.**

[11]   Sulis, AN (2025). Design and Construction of Web-Based Applications for Printing Services (Case Study: CV Zahra Printing). *Scientific Journal of Informatics Engineering (TEKINFO),* 26(1), 1-10.

[12]   Yusuf, M., & Matiin, N. (2022). Analysis Of The Effect Of The Marketing Mix On Purchasing Decisions. *International Journal Of Economics And Management Research*, 1(3), 177-182. Dasriani, Nga, & Anggrawan, A. (2021). Development Of An Intelligent Application System To Predict Website-Based Furniture Sales. Matrik: *Journal Of Management, Informatics And Computer Engineering*, 21(1), 53–62. Doi: 10.30812/Matrik.V21i1.1276.