



Analysis of Customer Data Processing Management Applications at Yuzaka Printing Palembang

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Abstract

This research aims to analyze the needs and implementation of customer data processing management applications at Yuzaka Printing Palembang. This application is designed to increase operational efficiency and accuracy in managing customer data, which includes order recording, transaction history, and customer relationship management. The research method used involves collecting data through direct observation, interviews with management, and analysis of company documents. The results of the analysis show that the manual system used previously often resulted in data errors, delays in order processing, and a lack of information integration between operations and management. By implementing technology-based data management applications, Yuzaka Printing can minimize the risk of errors, improve customer service, and support more timely decision making. This application includes main features such as customer database management, order status tracking, notification system for pickup schedules, and automatic financial reports. Implementation of this system is expected to not only increase productivity, but also build better long-term relationships with customers.

INTRODUCTION

In the current digital era, the printing industry faces intense competition, with customers demanding fast, accurate, and high-quality services. To meet these expectations, companies must efficiently manage customer data, ensuring seamless recording of customer information, transaction processing, and order history tracking. However, the challenge lies in handling unstructured data, which, if not properly managed, can lead to inefficiencies such as process delays, data inaccuracies, and ultimately, a decline in customer satisfaction. Without a structured and integrated data management system, companies risk operational bottlenecks, miscommunication, and errors that can compromise service quality and customer loyalty (Ren, 2022; Reyes et al., 2023). Therefore, adopting robust digital solutions for organizing and analyzing customer data is crucial for maintaining a competitive edge and delivering optimal service (Oladimeji & Owoade, 2024; Chabalala et al., 2024).

Yuzaka Printing Palembang is a printing business that has served various printing needs such as documents, banners and books on a small to large scale. However, managing customer data in Yuzaka is still done manually, which creates several

challenges such as difficulty in finding old customer data, errors in recording orders, and the lack of a system to monitor order status in real-time. This has the potential to hamper company productivity and affect customer satisfaction (Udofia et al., 2021; Udeh, 2024; Wu et al., 2022).

To answer these challenges, a technology-based solution is needed in the form of a customer data processing management application. This application is expected to provide a solution to simplify the management of customer information, speed up the service process, and increase the company's operational efficiency (Spring et al., 2022; Susanto & Khaq, 2024; Sharma et al., 2024). By using management applications, customer data can be managed centrally, structured and securely, thus supporting companies in providing better services to customers (Porter & Heppelmann, 2015; Ahmad et al., 2024; Jodlbauer et al., 2023; Mishra & Tyagi, 2022).

This research aims to analyze needs, design and evaluate customer data processing management applications that will be applied to Yuzaka Printing Palembang. With comprehensive analysis, it is hoped that this application can become an effective tool for increasing company competitiveness in the printing industry (Makatora et al., 2024; Grabowska & Saniuk, 2022). Data is material for information about real events or facts that are formulated in a group of certain non-random symbols that show quantities, actions, or things. Data can be in the form of notes on paper, books, or stored as files in a database (Loveri, 2018; Sayuti, 2024; Ustanti & Maqnun, 2024).

System processing ultimately produces information, therefore defining information is necessary to support the successful development of the system to be designed. Information is data that can be processed which is more useful and meaningful for those who receive it. So, information is data that is processed into a form that is more meaningful to the recipient and useful in decision making (Loveri, 2018).

METHODS

Unified Modeling Language (UML) is a "language" that has become the industry standard for visualizing designing and documenting software systems. UML offers a standard for designing models of a system. By using UML, models can be created for all types of software applications, where these applications can run on any hardware, operating system and network, and be written in any programming language (Pangestu & Ikasari, 2023).

Analysis and design of a good point of sales (POS) application is an application that covers all the specified scope. Of course, the integration aspect between parts of a POS application is very important, where the data in the POS application interacts with each other to increase speed, accuracy and convenience.



Figure 1. POS Application Konsel Framework

The image above shows the conceptual framework for analyzing and designing POS applications. This conceptual framework describes how the POS application process was created. Making this POS application starts from collecting data through observation and interviews until implementing this POS application. With this good process, it is hoped that the POS application that is built will be effective and can accommodate all business activities/processes that occur (Permana, 2015). Data

collection methods are methods or techniques used to collect information from various sources in order to obtain the data needed for research or analysis. Some commonly used methods include: a) Observation and perception are carried out directly on the Sniper Computerized Printing printer. The operation of the printing service ordering system and the data used are observed. Know the issues within the framework of agreements, requests and reports. The web-based Printing Services Ordering Information System can be used to analyze discovered problems and improve its performance and structure; b) Interview, the owner of Sniper Digital Printing is the subject of a direct interview. According to interviews, one of the problems with digital printing is that the system used is not computerized, which means providing customer service and storing archives and files which is still done manually takes quite a long time; c) Literature Study, the author conducted a literature study by collecting the necessary information and looking for references related to the observations made. Journals, reports, and books whose contents discuss designing information systems for ordering similar printing products that suit the problems faced can be used as reference sources (Casro et al., 2020); d) Literature Study, at this stage a literature review is carried out from books, journals and the internet which reviews sales, sales reports and sales inventory (Audrilia & Budiman, 2020).

The system development stage in building a goods delivery expedition management information system uses the System Development Life Cycle (SDLC) development method with a process model or waterfall paradigm. Where this describes a systematic and sequential approach to software development, starting with the specification of user needs and then continuing through the stages of planning, modeling, construction, and delivery of the system to customers/users (deployment), ending with support for the resulting complete software. The stages in the waterfall model take the basic activities used in almost all software development, so it is easier to understand, especially if only used in developing software that is not so large and complex (Vikasari, 2018).

Requirements Analysis (System Requirements Analysis), is a requirement gathering process that is carried out intensively to specify software or software requirements according to user needs, so that users can easily understand the system to be created.

Design, is the software design design stage as an estimate before the program code is created. System design using Flowcharts, Entity Relationship Diagrams (ERD) and User Interface design.

Development (Program Completion), This stage is the stage where the programmer implements the design of a system that has been approved at the previous stage. Before this design is implemented, a testing process is first carried out on the program to detect errors in the system that provide feedback on the system that has been created and obtain approval regarding the system.

Testing, all units developed in the implementation phase are integrated into the system after testing carried out by each unit. After integration the entire system is tested to check for any failures or errors.

Operation & Maintenance (Maintenance), This stage is the final stage of the waterfall model. The system has been completed and carried out maintenance. Maintenance consists of correcting errors that were not found in the previous step.

RESULTS AND DISCUSSION

A Data Flow Diagram (DFD) is a graphical tool used to represent how data moves within a system. It utilizes a set of standardized symbols to illustrate the flow of information through various interconnected processes, data stores, and external

entities. By mapping out how data is input, processed, stored, and output across different components of a system, a DFD provides a clear and structured visualization of the system's functional architecture. This tool is particularly valuable in the early stages of system design, as it helps analysts and developers understand the relationships between processes and the data they handle. Ultimately, DFDs support the development of efficient and logically coherent systems by offering insight into how tasks are executed and how data circulates throughout the system until its intended output is produced.

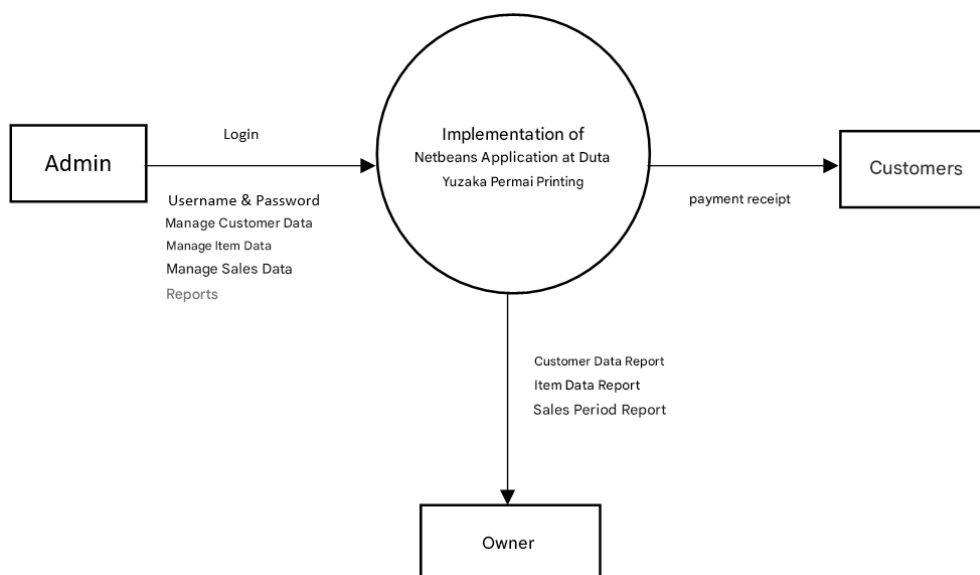


Figure 2. Diagram Konteks

To operate the data processing application developed for Yuzaka Printing, users utilize both the NetBeans integrated development environment and the XAMPP platform, which serves as the local server. The process begins by launching the XAMPP control panel and starting the MySQL Server, which enables the application to connect to its backend database. Once the database service is active, the user opens the NetBeans program, selects the relevant project file, and initiates the application by pressing the F6 key, which compiles and runs the code.

Upon successful launch, the first interface that appears is the Login Form, which functions as the entry point to the application. At this stage, the user is required to input a valid username and password. After entering the credentials, the user clicks the login button to proceed. If the information entered is incorrect, the system will generate a warning message via a dialog box, prompting the user to re-enter the correct login details. This authentication step ensures secure access to the application and protects sensitive customer and transaction data from unauthorized use.

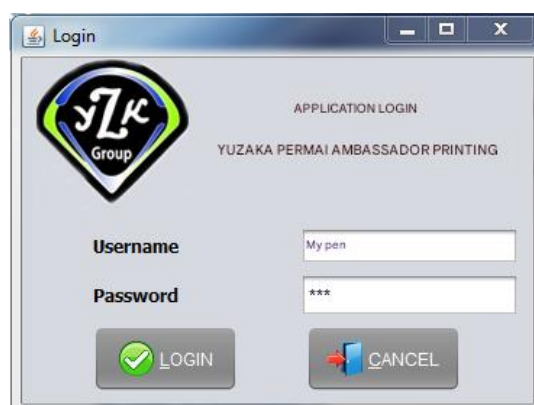


Figure 3. Form Login

After successfully logging into the Yuzaka Printing data processing application, users are directed to the Menu Form, which serves as the main interface of the system. This form features a structured menu bar that provides access to the core functionalities of the application, organized into four main categories: File, Transactions, Reports, and About. The File menu includes components for managing key data sets such as item data, customer data, administrator data, and also provides an option to exit the application. The Transactions menu is designed to facilitate the input and management of sales-related activities, allowing users to record and monitor transactions efficiently. The Reports menu provides access to sales trend reports, which help in analyzing performance over time and making data-driven business decisions. Lastly, the About menu contains information related to the development of the application, including the student contributors involved in the system's creation. This well-organized menu structure ensures ease of navigation and supports users in performing their daily tasks effectively within the system.

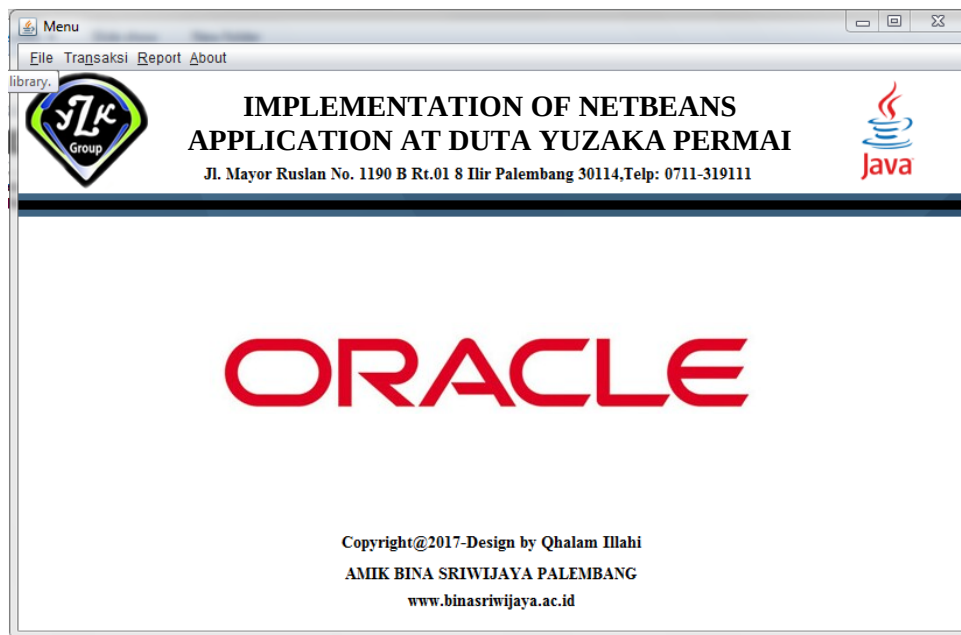


Figure 4. Form Menu

The Customer Data Form is a dedicated interface used to manage and store information related to Yuzaka Printing's customers. This form includes several input fields designed to capture essential customer details. Specifically, the data entered into this form includes the customer code, customer name, gender, address, and telephone number. Each of these fields plays a vital role in identifying and contacting customers, ensuring that the customer database remains accurate and comprehensive for the company's operational needs.

Customer Code	Customer Name	Address	No. Telephone
P001	Alamsyah Sahari Usman	Km 14	082281675567
P002	My pen	Kertapati	082145678901
P003	Fefi	for lebar	082178789090
P004	Erma	Mataram	087897875432
P005	Lina	Plaju	082134567892
P006	Yudha son	new boom	089765432133
P007	Fikri dwi	Pusri	082178781234
P008	Siska	Kertapati	082213456725

Figure 5. Customer Data Form

Customer data reports in the Yuzaka Printing system are generated based on the information entered through the customer data input form. These reports serve as a structured summary of all customer-related information that has been recorded in the system. To generate and view a customer data report, the user simply needs to access the customer data form and click the “Print” button. This action will automatically compile the relevant data and display it in a report format that is ready for printing or further review.

YUZAKA PERMAI AMBASSADOR PRINTING
Jl. Mayor Ruslan No.1190 B 8 Ilir Palembang 30114, Tel: 0711-3191111

CUSTOMER DATA REPORT

To: Head of Printing Company Mr.
Ferdinand Destriansyah

The following is the Yuzaka Permai Ambassador Printing Customer Data Report.

Code	Customer Name	Address	No. Telephone
P001	Alamsyah Sahari Usman	Km 14	082281675567
P002	My pen	Kertapati	082145678901
P003	Fefi	for lebar	082178789090
P004	Erma	Mataram	087897875432
P005	Lina	Plaju	082134567892
P006	Yudha son	new boom	089765432133
P007	Fikri dwi	Pusri	082178781234
P008	Siska	Kertapati	082213456725
P009	Mr Irian	jakabaring	08213456785
P010	Mr. Indra	Kertapati	082290901234
P011	Accep Kurniawan	Cape Api-api	087856742345
P012	Sherlyn	Mataram	082177767875
P013	Mulyadi	Plaju	08213456270
P014	Irian	travel	08999999
P015	Indra	Kertapati	081290907656
P016	Mr Aqil	travel	08789156777

Palembang, 19 October 2017
Best regards

Indah Afsari
Administration

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Figure 6. Customer Data Report

Implications of System Implementation on Operational Efficiency

The implementation of customer-data processing management application, at the Yuzaka Printing environment, has exhibited clearcut improvement on the workflow process and this was deduced after systematic integration of the functions as relating to the login authentication process, menu navigation, customer data entry, and report generation. But the overall impact to business procedures and success of the management is worth a stringent debate.

The conversion of manual to electronic data management in the first place has reduced the chance of human error and at the same time advanced accesses to customer information hence enhancing data accuracy as well as the efficiency of delivery of services. These results can be used to explain the efficiency gained in the more modern changes in the service industries as noted by Susanto & Khaq (2024). Second, this modular structure of the application, where we see coherent File, Transactions, Reports, and About components, allows specialization of job responsibilities between the employees, which makes the delegation and responsibility clear. This type of segmentation is aligned with the ideas of the effective system architecture that Porter & Heppelmann (2015) present, according to which intelligent systems are expected to facilitate user navigation and operational transparency. Third, even though the report-generation module can deliver timely business insights, its weaknesses should be considered. XAMPP and NetBeans are also used to continue the deployment of the system in a local environment that can present a limitation in terms of scalability and access, requiring external environments. The setup might lead to future extensions to be able to ensure competitive capacity within the environment, where cloud-based solutions have a higher level of availability and collaboration.

Besides, even base level data protection through user authentication is needed. Enhanced encryption and role based access controls should thus be factored into this discussion so as to enhance the privacy of data especially when dealing with sensitive client information. This aspect is critical more so with the new data protection laws being instituted. Finally, the actual value of the application is the fact that it will facilitate managerial decision making via proper and up to date information access. Now, managers are able to analyze customer trends, transaction history, and service efficiency based on the reports generated by the system, which leads to better strategic planning, which is also one of the goals voiced by Spring et al. (2022).

CONCLUSION

The adoption of the NetBeans-powered application in the Yuzaka Printing company is an indication of a considerable change of traditional operations into digital operations especially in data management of goods, customers as well as the sales transactions. This is a good change, as dependency on physical documents is decreased and a chance of losing data because of mislocated or damaged papers decreases. The system increases the accessibility and promotes the access of data by digitizing records and maintaining them in the form of files that encourage quick access to the data through rapid retrieval, which comes in handy when instant decisions have to be taken. Nevertheless, although the app is efficient in automating the process of basic data processing tasks, it seems that it can only be used to the efficiency of operations. It does not have the integration to higher level analytics or business intelligence options that might provide more insight into customer behavior or sales patterns. Moreover, using local storage alone can create some concerns concerning data security, reliability of backups, and scalability, in case the business expands or needs remote access features. All in all, even though the application is a significant improvement to Yuzaka Printing, the upcoming versions will be suggested to focus on more available capabilities of supporting the strategic decision-making activities and switching to the more secure and scalable data infrastructure.

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