

Development of a Sales Information System Using Microsoft Access at PT Wings Group to Improve the Effectiveness of Goods and Transaction Data Management.

Iklima Al Aura Amarulloh ¹, Sahlaa Azizaah Julianda ²

¹ Politeknik Negeri Bandung

² Politeknik Negeri Bandung

Received 10 10, 2025; Revised 10 28, 2025; Accepted 10 30, 2025

ABSTRAK

PT Wings Group sebagai perusahaan yang bergerak di sektor *Fast Moving Consumer Goods* (FMCG) memiliki aktivitas penjualan dan distribusi yang kompleks, sehingga memerlukan sistem informasi yang akurat dan terintegrasi. Penelitian ini bertujuan untuk mengembangkan sistem informasi penjualan menggunakan *Microsoft Access* sebagai solusi dalam pengelolaan data produk, pelanggan, dan transaksi yang sebelumnya dilakukan secara manual. Metode pengembangan yang digunakan adalah model *Waterfall*, yang meliputi tahapan analisis kebutuhan, perancangan, implementasi, pengujian, dan pemeliharaan sistem. Data diperoleh dari dokumen internal perusahaan serta literatur yang relevan. Hasil pengembangan menunjukkan bahwa sistem ini mampu menyederhanakan proses pencatatan, mempercepat perhitungan transaksi, dan menghasilkan laporan secara otomatis. Dengan adanya sistem ini, PT Wings Group dapat meningkatkan efisiensi dan ketepatan dalam proses penjualan sehari-hari.

Kata Kunci: Sistem Informasi Penjualan; Microsoft Access; Metode Waterfall; Transaksi; Data Produk.

ABSTRACT

PT Wings Group, as a company in the Fast Moving Consumer Goods (FMCG) sector, has complex sales and distribution activities, requiring an accurate and integrated information system. This study aims to develop a sales information system using Microsoft Access as a solution for managing product, customer, and transaction data, which was previously done manually. The development method used is the Waterfall model, which includes requirement analysis, design, implementation, testing, and system maintenance. Data was obtained from internal company documents and relevant literature. The development results show that this system can simplify recording processes, accelerate transaction calculations, and generate reports automatically. With this system, PT Wings Group can improve efficiency and accuracy in its daily sales processes.

Keywords : Sales Information System, Microsoft Access, Waterfall Method, Transactions, Product Data

INTRODUCTION

PT Wings Group, as a FastMoving Consumer Goods (FMCG) company, has intensive distribution and sales activities that require an accurate and efficient sales information system. In the fast-paced industry context, managing product, customer, and transaction data manually or using conventional spreadsheet applications poses significant risks of recording errors, delayed reporting, and disconnected data that should be seamlessly integrated. Therefore, a simple yet effective desktop database-based information system is needed to support operational activities.

One of the problems often encountered in operational environments is the lack of integration between product, buyer, and transaction data. This makes it difficult to monitor stock, calculate total purchases, and track sales transactions. On a large scale, such as at PT Wings Group, this can disrupt distribution flows and lead to poor decision-making.

The objective of this study is to design and develop a sales application based on Microsoft Access that includes three main components: product forms, buyer forms, and transaction forms. This application is expected to provide a practical solution to assist in recording, processing sales data, and generating reports automatically and systematically.

To support the system development process, this study uses the Waterfall method, which is a sequential approach to

information system development, starting from the requirements analysis stage, system design, implementation, system testing, to maintenance. This method was chosen because it is suitable for projects with clear requirements from the outset. Each stage is completed thoroughly before proceeding to the next stage, resulting in a well-structured and well-documented system.

Theoretically, Microsoft Access is one of the relational database management systems (RDBMS) suitable for small to medium-sized business needs. Access enables the development of form- and report-based information systems that are flexible and can be tailored to user needs (Hernandez 2013). The implementation of an integrated information system can improve operational efficiency and support managerial decision-making (Laudon & Laudon 2018).

This study proposes a relational database system design-based approach using key Access features such as tables, relationships, forms, queries, and reports that are interconnected. The innovation of this study lies in the application of relatively simple tools to support the efficient management of sales data in the context of large companies such as PT Wings Group. The system that was built not only reduces dependence on manual methods, but also improves accuracy and productivity in transaction data processing.



LITERATURE REVIEW

Sales Information System

Sales are one of the fundamental elements in business operations that have a broad scope, not limited to the exchange of goods for money. Mega (2013) explains that sales activities cover various company functions such as pricing, promotional strategies, and distribution management. This shows that sales are part of a complex system and do not stand alone. Hayuningtyas (2015) also emphasizes that sales are the end result of the entire marketing process, where success in pricing, logistics, and building customer relationships greatly determines overall business performance

In this context, a sales information system is needed as a means to manage all activities related to the sales process efficiently and in an integrated manner. Jogiyanto (2005) defines an information system as a combination of humans, hardware, software, communication networks, and data resources that collect, transform, and disseminate information to support decision-making. A sales information system enables real-time transaction data collection, automatic inventory monitoring, and accurate reporting.

Kadir (2014) adds that a computerized sales information system can reduce

recording errors, speed up transaction processes, and increase customer satisfaction through faster and more transparent access to information. In other words, this system not only supports administrative activities but also serves as a strategic tool in managerial decision-making.

Microsoft Access as a System Development Tool

In the digital age, the use of applications to support information systems has become a basic necessity for companies of all sizes. Supadi (2015) states that applications are software units specifically designed to help complete certain operational tasks automatically. This means that applications have great potential to transform error-prone manual processes into efficient and well-documented digital processes. Maulana and Bunyamin (2015) reinforce this view by stating that applications not only process data but also generate information that is highly valuable to organizations.

One of the most widely used applications in the development of small to medium-sized information systems is Microsoft Access. Access is a relational database management system (RDBMS) with a simple yet powerful graphical interface capable of building comprehensive information systems. According to Hernandez (2013), Access is suitable for non-programmers because it provides visual features for creating tables,



forms, queries, and reports without the need for extensive coding. This makes it an ideal solution for divisions or departments within a company that require an independent and quick system without the involvement of the central IT team.

Technically, Access adopts the relational model introduced by E.F. Codd (1970), where data is stored in tables interconnected using primary keys and foreign keys. This approach enables consistent data management with minimal duplication. Additionally, features such as data input forms, transaction tracking, and daily sales report printing can be easily built, directly supporting operational needs in an efficient manner.

Goods and Transaction Data Management

Goods and transaction data management is one of the main functions in a sales information system because it is directly related to the company's daily business processes. Goods, as the main object in transactions, must be clearly defined in the system, including their codes, product names, unit prices, and available stock quantities. Riyono and Budiharja (2016) define goods as anything offered to consumers to meet their needs, whether tangible or intangible. In the world of commerce, goods must be properly classified so that inventory management processes can be carried out optimally.

Agustina and Parjono (2017) add that goods vary in type, function, and volume, which need to be organized and recorded systematically to ensure smooth distribution to the market. Therefore, the sales information system must be able to document all product data in a format that is easy to access, update, and report. This is important in supporting stock control functions, determining reorder points, and minimizing the risk of stockouts.

Additionally, sales and purchase transaction data must be managed accurately to maintain supply chain sustainability and customer satisfaction. Nugroho (2013) notes that purchase transactions form the basis of the procurement process, ensuring product availability in the warehouse. Meanwhile, Hariyanto (2016) emphasizes the importance of documenting purchase transactions to support the tracking of goods flow and transparent financial records. A good sales information system must integrate buyer data, including customer names, addresses, transaction codes, and purchase history, to support sales analysis and customer relationship management.

Information System Effectiveness

Information system effectiveness is a measure of the system's success in achieving organizational goals, particularly in terms of operational efficiency, data accuracy, and user satisfaction. According to DeLone and McLean (2003), the model



for measuring information system effectiveness consists of several key dimensions, namely system quality, information quality, use, user satisfaction, and organizational impact.

O'Brien and Marakas (2010) emphasize that an effective information system is not only capable of storing and processing data but also assists users in making decisions more quickly and accurately. This is particularly important in dynamic and competitive business environments, where delayed decisions can result in lost market opportunities.

In the context of this study, the development of a Microsoft Access-based sales information system at PT Wings Group aims to improve the effectiveness of inventory and transaction data management. Although the company already has an advanced ERP system, there is still a need for a more flexible system that can be quickly implemented in specific operational units. By implementing an Access-based system, manual processes can be digitized, the risk of input errors can be minimized, and transaction reports can be generated automatically and in real-time.

Thus, the developed system is not merely an administrative tool but also an integral part of the company's digital transformation strategy. This system demonstrates that affordable and user-friendly technology can also have a significant impact on work efficiency and data-driven business decision-making.

METHODS

This study adopts the Waterfall method, a classic and widely used model in systems development life cycle (SDLC), known for its linear and structured approach. The Waterfall model consists of a series of well-defined phases—needs analysis, system design, implementation, testing, and maintenance—where each stage must be completed sequentially before progressing to the next. This method is particularly effective for projects in which system requirements are clearly defined from the beginning and are not expected to change significantly during the development process.

Its step-by-step nature helps ensure thorough documentation, systematic tracking, and reduced ambiguity in the project workflow. For the development of an internal desktop-based sales information system at PT Wings Group, the Waterfall model was chosen due to its clarity, predictability, and suitability for structured environments.

The type of research employed in this study is categorized as applied research. Unlike basic research that seeks to generate theoretical understanding, applied research aims to provide practical solutions to real-world problems. In this context, the study focuses on the design and development of a digital sales information system tailored to the operational needs of PT Wings Group a prominent company in the Fast Moving Consumer Goods (FMCG) sector.



The research responds directly to issues observed in the manual management of sales transactions, inventory, and buyer records, such as data inconsistency, redundancy, slow reporting processes, and difficulty in generating consolidated reports. Thus, the main objective is to build a working system that can be implemented immediately and used to improve the company's internal processes.

The object of the research is the sales information system itself, which is engineered to support the accurate and efficient processing of data related to goods, buyers, and transactions. This system is developed using Microsoft Access, a powerful desktop database management tool that supports the creation of relational databases, forms, queries, and reports.

Microsoft Access was selected for its user-friendly interface, integration capabilities, and suitability for small- to medium-scale data systems that do not require enterprise-level infrastructure. Through this platform, users can easily input, store, update, and retrieve data in a consistent and relational manner, minimizing the need for complex programming while maintaining functionality and reliability.

In terms of data sources, the research utilizes secondary data derived from the internal documentation of PT Wings Group. These include historical transaction reports, inventory lists, customer records,

and other related archives that reflect the actual practices and challenges in the company's sales data management. The use of secondary data ensures that the system is designed based on real-world scenarios and addresses the practical challenges faced by the company.

Furthermore, a literature review was conducted to gather theoretical foundations and best practices from previous studies related to sales information systems, database management systems (DBMS), and the Waterfall development methodology. These references provide critical insights into the most effective strategies for designing relational databases, implementing user interfaces, and structuring report outputs.

By synthesizing these various data sources, the system requirements were identified with precision, forming the basis for the development process. Problems commonly found in manual data management—such as difficulty in tracking real-time stock availability, slow access to transaction summaries, and high error rates in manual entries—were analyzed and addressed during the needs analysis phase. As the system was developed following the linear stages of the Waterfall model, each phase was documented, tested, and validated before moving forward. This approach not only increases system reliability but also ensures that the final product aligns closely with user expectations and business needs.

In conclusion, this methodology and research approach allow for the creation of a functional, user-oriented sales information system that bridges the gap between manual processes and digital efficiency. The result is a streamlined application that supports operational accuracy, speeds up reporting, enhances data consistency, and improves overall productivity within PT Wings Group's internal sales management workflow.

The system development stages follow the five main steps in the Waterfall model, which include:

1. **Needs Analysis:** At this stage, data is collected and reviewed based on secondary data from company documents, with a focus on recording goods, buyer information, and sales transactions. Issues such as input errors, data duplication, and reporting delays are the main concerns.
2. **System Design:** This stage involves designing the database structure using a relational approach. The tables designed include item data (code, name, price), buyer data (code and name), and transaction data (date, quantity, total price). Additionally, a user interface is designed to facilitate data input and system navigation.
3. **Implementation:** The system was then developed using Microsoft Access, which included creating forms for inputting product, buyer,

and transaction data, as well as integrating automatic calculation functions into the transaction form using Access expressions.

4. **System Testing:** The system was tested using test data to ensure that all features functioned as intended, including data validation, table relationships, and calculation accuracy.
5. **Maintenance:** After the system was launched, monitoring and improvements were carried out if deficiencies were found or new needs arose. This stage aims to keep the system running optimally in the long term.

The primary tool used in this research is Microsoft Access 2019, which is utilized as a platform for database system development, form creation, and reporting. The use of this application is deemed appropriate as it supports the development of simple to medium-sized systems with high flexibility and efficiency.

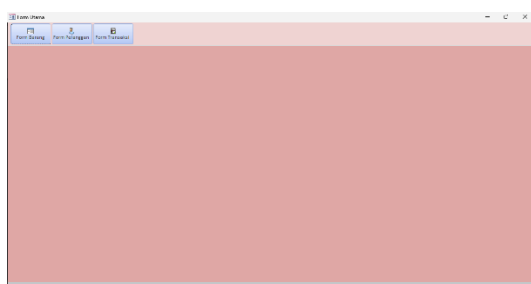
RESULT AND DISCUSSION

The results of developing a sales information system using Microsoft Access show that the system successfully meets the needs of integrated data management for goods, buyers, and transactions. This system is equipped with specially designed input forms to facilitate the recording process, data validation, and automatic calculation of total purchases. Trials using simulated data prove that the system is able

to avoid input errors and ensure the accuracy of transaction calculations. Product and customer data that has been entered is directly linked to the transaction form, thereby minimizing errors caused by duplication or manual entry.

Overall, the system improves work efficiency, reduces the potential for human error, and facilitates data tracking. Additionally, the simple interface makes the system easy to use for non-technical administrative staff. However, the system still has limitations as it can only be used locally (stand-alone) and does not support multi-user online functionality. Despite this, the system has proven its ability to support more effective sales data management and can be further developed to meet the company's operational needs in the future.

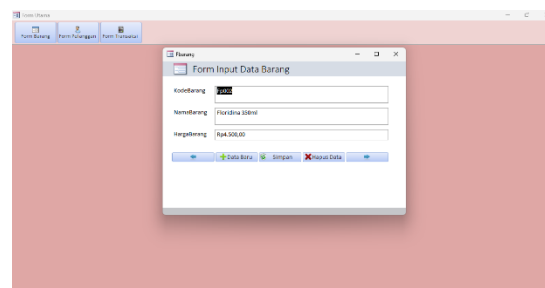
Image 1. Results from the Main Form for the Creation of the PT Wings Group Sales System Application



The main form shown in the image above is the home page (initial dashboard) of the sales information system application developed using Microsoft Access. This form is designed as a central navigation point, allowing users to access three main

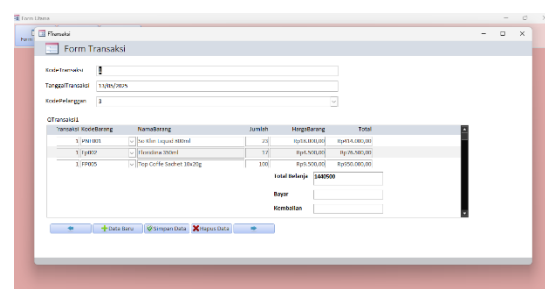
forms in the system, namely: Goods Form, Customer Form, and Transaction Form.

Image 2. Results from the Goods Form for the Creation of the PT Wings Group Sales System Application



The image above shows the item data input form, which is one of the main components in a Microsoft Access-based sales information system. This form is used to record and manage item data available in the sales process. Information entered through this form is automatically saved to the item table in the system database.

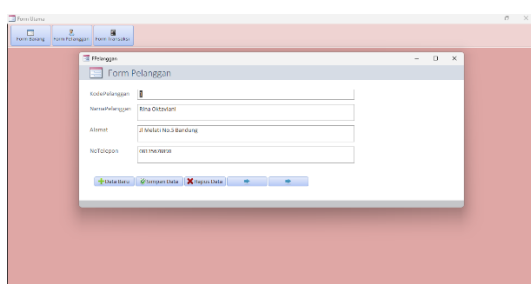
Image 3. Results from the Customer Form for the Creation of the PT Wings Group Sales System Application



The image shows the Transaction Form in a Microsoft Access-based sales application, which is used to automatically record and manage transaction data. This form includes input fields for transaction

codes, dates, customer codes, and a table detailing the items purchased, complete with quantities, unit prices, and totals per item. At the bottom of the form, there are fields for the total purchase amount, payment method, and automatically calculated change. The application also provides control buttons for adding, saving, and deleting data, making the sales recording process fast, accurate, and structured.

Image 4. Results from the Transaction Form for the PT Wings Group Sales System Application



The image shows the Customer Form in a Microsoft Access-based sales application that is used to systematically record customer data. This form consists of several input fields such as Customer Code, Customer Name, Address, and Phone Number. In addition, there are navigation buttons at the bottom such as New Data, Save Data, and Delete Data that make it easy for users to manage customer information. With this form, customer data can be stored neatly and automatically integrated into the sales transaction system.

CONCLUSIONS

This study successfully designed and implemented a Microsoft Access-based sales information system using the Waterfall system development method. The developed system consists of modules for managing product data, buyer data, and sales transactions, all of which are integrated into a relational database. The use of Microsoft Access has proven to improve recording efficiency, reduce the risk of calculation errors, and facilitate the automatic reporting process.

Compared to manual recording methods, this system provides a practical and effective solution for managing sales data, particularly for medium-sized companies such as PT Wings Group. The successful testing of the system demonstrates that it functions as intended and meets user needs. Therefore, the development of desktop database-based information systems remains highly relevant for implementation in business environments requiring integrated yet simple systems.

REFERENCES

- Agustina, D., & Parjono. (2017). *Dasar-dasar manajemen pemasaran*. Deepublish.
- Codd, E. F. (1970). A relational model of data for large shared data banks. *Communications of the ACM*, 13(6), 377–387.
<https://doi.org/10.1145/362384.362685>

Hariyanto. (2016). *Manajemen pembelian dan pengendalian persediaan*. Andi.

Hayuningtyas, R. (2015). *Manajemen pemasaran*. Universitas Brawijaya Press.

Hernandez, M. J. (2013). *Database design for mere mortals: A hands-on guide to relational database design* (3rd ed.). Addison-Wesley.

Maulana, R., & Bunyamin, M. (2015). *Pemrograman dasar dan pengolahan data*. Informatika.

Mega, P. (2013). *Dasar-dasar pemasaran*. Prenadamedia Group.

Nugroho, H. (2013). *Sistem informasi manajemen persediaan dan pembelian*. Grasindo.

Riyono, B., & Budiharja, B. (2016). *Manajemen bisnis ritel*. Alfabeta.

Supadi. (2015). *Dasar-dasar teknologi informasi*. Andi.