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Design of a Web-Based Computer Sales Information System at Tend Komputer

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Abstract

The rapid advancement of technology has significantly influenced trading systems and facilitated business operations such as offering, purchasing, and selling goods and services via the internet. Alongside the development of computer technology, the internet has emerged as an effective solution to address various challenges in commerce. Business transactions can now be conducted electronically without requiring physical contact or face-to-face meetings. In the realm of online business, e-commerce plays a pivotal role in enhancing the efficiency and effectiveness of electronic business activities, offering numerous benefits for both companies and consumers. The presence of e-commerce is expected to improve services by providing comprehensive information about the offered products.This study employed data collection methods including observation, interviews, and library research. Data analysis was conducted through four stages: system survey, survey findings analysis, information needs identification, and system requirements specification. The system design utilized the Waterfall model with Unified Modeling Language (UML) tools. Furthermore, the MySQL database was applied to facilitate the processing of goods data for sales, ensuring swift, accurate, and efficient marketing efforts.
The outcome of this web-based sales information system design is anticipated to enhance operational efficiency in the sales process. This system provides an integrated platform to streamline product management and improve customer access to information. Additionally, the system contributes to optimizing sales processes by reducing manual workloads and increasing data management accuracy. The implementation of this system is expected to support the effectiveness of sales activities at TEND Komputer while offering a competitive edge in an increasingly dynamic market.

Keywords: *Information System, Computer Sales, E-commerce, MySQL, UML.*

1. Introduction

The rapid development of the economy and technology, particularly in Tegal Regency, has significantly increased society's demand for information on computer technology. Computers have become an essential need in human life, supporting various aspects such as information processing, work, and entertainment [1]. This condition presents a substantial opportunity for companies to invest in the computer sales sector by offering diverse services designed to meet consumer needs optimally. In an increasingly competitive market, many companies are striving to develop innovative computer sales strategies while considering consumer preferences and demands. A deep understanding of market conditions and customer desires is key to success, enabling companies to provide services and products that are not only relevant but also easily accessible to customers. One of the critical approaches in this regard is the utilization of web-based platforms to support sales processes [2].

Computers, as a significant technological product, have become a primary need, facilitating various human activities. The rising demand for computers aligns with consumers' increasing need for quick and efficient access to information. In this digital era, online purchasing and ordering methods have become an efficient solution in terms of both time and cost. Unfortunately, TEND Komputer, as a company in the computer sales sector, has not yet fully utilized this technology. In this context, implementing web-based technology to support the sales information system at TEND Komputer is expected to provide significant benefits. Customers can easily access information about computer types, prices, specifications, and features through the website, simplifying transactions without time and location constraints. This approach not only enhances customer experience but also provides efficiency for the company in monitoring real-time stock levels.
This research focuses on analyzing and designing a web-based sales information system for TEND Komputer [3]. The analysis process involves identifying system requirements that support the company’s operations, while the design phase employs a structured approach to ensure the system's optimal functionality [4]. By utilizing appropriate methods and technologies, this research aims to develop an effective and efficient information system for TEND Komputer. The primary objective of this research is to analyze the current sales information system requirements at TEND Komputer and design a web-based system that can support all transaction processes. The system is expected to benefit both store owners and customers. For store owners, it allows real-time stock monitoring and facilitates better-organized sales

data management. For customers, the system provides easy access to the latest product information and enables transactions anytime and anywhere.

Another benefit of this system is its potential to enhance the company's competitiveness in an increasingly challenging market. By leveraging web technology, TEND Komputer can expand its market reach, improve customer satisfaction, and establish itself as a company that adapts to technological advancements. This research is expected to contribute significantly to the development of web-based information systems in the computer sales sector [5]. The findings can also serve as a reference for other companies seeking to optimize technology use in supporting their business operations.

2. Research Methodology

The research methodology presented in this study is designed to provide a comprehensive understanding of the sales strategies employed by TEND Computer and to propose a web-based information system that can enhance the efficiency and effectiveness of the sales process. This research employs a combination of methods that enable a deep understanding of the existing situation, as well as the design of a system that addresses the identified issues [6]. The data collection methods used in this study include observation, interviews, and literature research. The observation method is conducted by directly observing the activities taking place at TEND Computer that are related to computer sales. This observation aims to gather data on the current sales process, as well as the challenges and obstacles faced by the store [7]. Through direct observation, the researcher can gain a clear understanding of the daily activities related to computer sales that are still relying on conventional methods [8]. In addition to observation, interviews are conducted with key stakeholders involved in the sales process, such as store staff and managers. The interviews aim to gain more in-depth information regarding the system's needs, difficulties faced, and their expectations for a more structured computer sales information system. These interactions allow the researcher to acquire detailed and accurate insights into aspects that need improvement and consideration in the system design to be developed.

The third method is literature research [9]. The researcher conducts a search and study of relevant books, journals, and articles related to the research topic. This literature review aims to gather theories and concepts related to web-based sales information systems and identify modern methods and technologies that can be applied to TEND Computer. In addition, the researcher also relies on information obtained from online media, which can provide up-to-date insights into similar system developments in relevant industries. The analysis method employed in this study involves four interconnected stages. First, a survey of the existing system at TEND Computer is conducted to examine how the current sales process operates. It was found that the information available to customers is limited to banners or e-flyers, both online and offline, which results in a lack of transparency in product and price information. This limitation contributes to a decrease in buyer interest during the purchasing process. After the survey, the next stage is to analyze the findings, which reveal that TEND Computer is not utilizing media or websites for the dissemination of computer sales information. The absence of a dedicated website for this purpose limits the accessibility of information for potential buyers, reducing sales opportunities for the store.

The next stage involves identifying the information needs that TEND Computer requires. In today's digital era, people expect things to be done quickly and accurately. Therefore, it is essential for TEND Computer to develop a website that provides complete information about the products sold, including specifications, prices, and features of each computer offered. This website is expected to provide convenience and ease for consumers in accessing information and making purchases. The final stage of the analysis is the identification of system requirements. Since TEND Computer is still operating manually and does not have an integrated system, there is a need for a sales information system that meets both functional and non-functional requirements. These system requirements will form the foundation for developing a more structured website that meets the operational and business needs of TEND Computer. In terms of system design, the Waterfall method is used. The Waterfall method is chosen because of its structured and systematic nature, making it suitable for designing an information system that requires clear stages from start to finish [10]. To support this design, a tool called Unified Modeling Language (UML) is used to model and clearly describe how the web-based sales information system will function. This method is expected to result in a web-based computer sales system that meets the needs of all involved parties, including the store owner, staff, and customers.
The outcome of this design is expected to be a website that facilitates the computer sales process at TEND Computer by providing faster and more accurate access to information. Additionally, the system will enhance the efficiency of managing sales data and stock levels in real-time, which will positively impact customer service and satisfaction.

3. Result and Discussion

In this section, a comprehensive analysis of the existing system at TEND Komputer is conducted, focusing on the output, input, and process involved in the sales transaction flow. This analysis aims to understand the extent to which the current system supports the sales activities and to identify potential improvements that could be made by implementing a website-based information system. The output analysis shows that the sales receipt is one of the key outputs in the transaction process at TEND Komputer. The sales receipt serves as an important transaction proof for both the customer and the administration. It is printed on paper and provided to the customer after the payment process is completed. At TEND Komputer, the sales receipt is issued twice a week, with a volume of approximately 60 units of computers sold per month. This indicates that the transaction frequency is quite high and requires an efficient system to accurately and systematically document each transaction.

In addition to the sales receipt, the input analysis reveals that buyer data is crucial information that must be collected before a transaction takes place. This buyer data is usually recorded on paper, which is submitted by prospective buyers when placing an order. Each sales transaction involves the collection of buyer data to identify the customer and provide information regarding the number of buyers involved in each transaction. This data collection process occurs twice a week, according to the frequency of transactions. However, the fact that this data is still recorded manually requires special attention, as there is a potential for errors or omissions that could disrupt the smooth running of the sales process. Regarding the process analysis, it is evident that the flow of data and information in the sales transaction at TEND Komputer follows several stages involving different parties. The process begins when the buyer selects the desired product and

proceeds to make an order. Afterward, the admin is responsible for calculating the total amount and generating the sales receipt, which will then be presented to the buyer for payment. In addition, the transaction is recorded in the sales report, which is used by the administration to monitor sales progress. This stage highlights the close interaction between the buyer, admin, technician, and director in facilitating and managing each sales transaction.

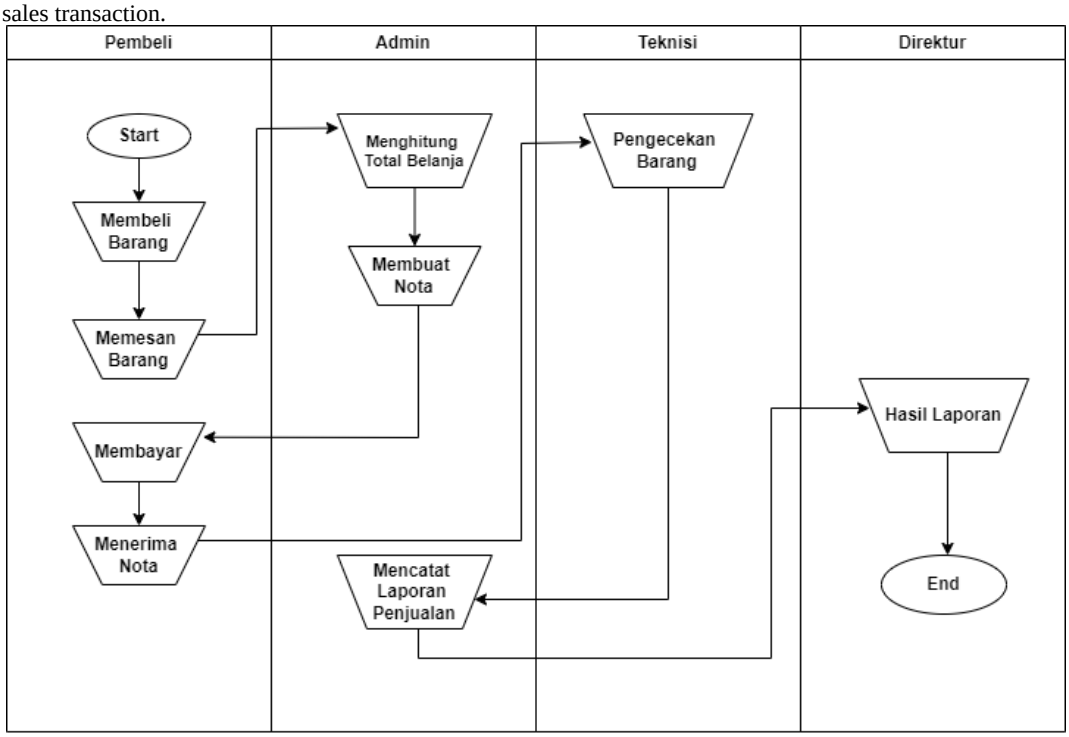

Fig. 1: Flow of Document in the Sales Transaction.

The document flow in the sales transaction at TEND Komputer illustrates the process that starts with the buyer selecting a product and ends with the payment made by the customer. In this flow, the admin plays a vital role in calculating the total amount and generating the sales receipt. Technicians are also involved in ensuring that the ordered product is available and ready to be handed over to the customer. The director, as the main decision-maker in the company, is involved in overseeing and evaluating the sales reports prepared by the admin to assess the overall sales performance. These four elements play interconnected roles in ensuring the smooth execution of each sales transaction at TEND Komputer. Although the transaction process at TEND Komputer is running fairly smoothly, there are several challenges that need to be addressed, particularly regarding the manual recording system still in place. This manual recording process risks introducing errors or inaccuracies in documenting buyer data and transaction details. Therefore, the implementation of a web-based information system becomes a highly relevant solution to improve the efficiency and accuracy of sales transactions. With a web-based system, the recording of buyer data and sales transactions can be done automatically and integrated, thus reducing the potential for errors and speeding up service.

Moreover, a web-based system also enables better organization and accessibility of sales data and reports. The administration can monitor the stock of computers in real-time and manage sales reports more efficiently. This will certainly help the store owner optimize business operations and enhance customer satisfaction, as customers increasingly expect ease and speed in transactions. Therefore, the development and implementation of a web-based information system at TEND Komputer is critical to supporting the future growth and sustainability of computer sales. Overall, the results of this analysis show that the system in place at TEND Komputer still heavily relies on manual methods for both data recording and transaction flow. To improve efficiency and accuracy, the implementation of a website-based information system is necessary to streamline and accelerate the transaction process. With a more integrated and automated system, TEND Komputer can improve customer service, minimize errors, and expedite administrative processes, ultimately enhancing the company’s competitiveness in an increasingly fast-paced market.

3.1. Usecase Diagram

In the development of the information system at TEND Komputer, the creation of a use case diagram becomes an essential step to illustrate the interaction between actors and the system being developed. This use case diagram will facilitate a better understanding of the workflow and access rights of each user within the system. In this system, there are three main actors involved: Admin, Buyer, and Director. Each actor has distinct roles and access rights tailored to the functionalities they can perform within the system.

The first actor, Admin, plays a crucial role in managing data and system operations. Admin has the right to log into the system, which is the first step in accessing the available features. Once logged in, Admin can add new data into the system, such as product data, customer data, or other transaction data necessary to support the sales process. Admin also has the authority to manage the product list available for sale, from adding new products, editing existing product data, to removing products that are no longer available. Additionally, Admin is responsible for managing incoming orders, recording the orders received, and processing them according to the established procedures. Furthermore, Admin is in charge of generating reports, including sales reports and other operational reports, which will be used by management to analyze the company's performance.

The second actor in this system is the Buyer, who has more limited access compared to the Admin. The Buyer can register to become a member or user of the system, allowing them to access various product-related information offered by TEND Komputer. Buyers can search and view the product list available at TEND Komputer, which will help them choose products that meet their needs. Buyers also have the ability to place orders for products online, which will then be processed further by the Admin. In this case, the system provides convenience for Buyers to transact without needing to visit the store directly, as long as they have a device connected to the internet.

The third actor is the Director, who plays a supervisory and decision-making role related to product management and the reports generated within the system. The Director has the right to access and manage the product list available at TEND Komputer. Although the Director is not directly involved in managing customer data or orders, their role in ensuring that the product list is always updated and aligns with market needs is vital. Additionally, the Director has access to reports generated by the Admin, which include sales reports, financial reports, and other performance-related reports. With these reports, the Director can monitor sales development and make strategic decisions for better business growth.

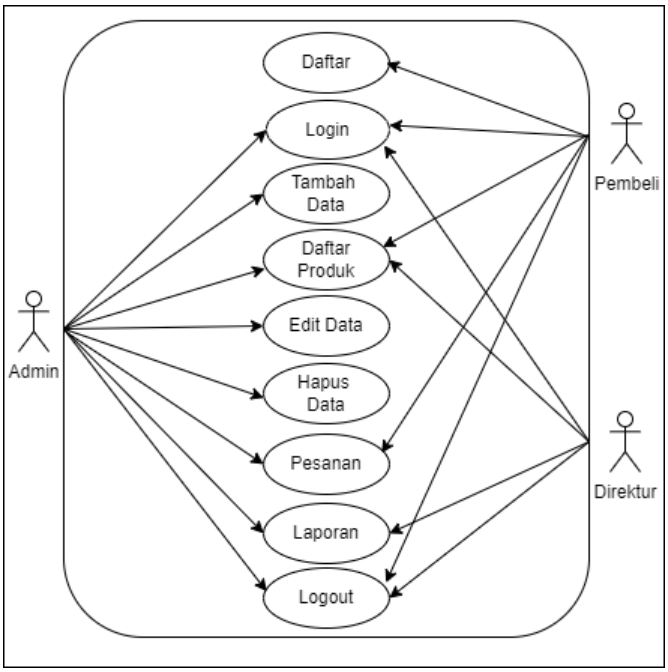

Fig. 2: Usecase Diagram in the Sales Transaction.

In the context of a use case diagram, each actor is connected to specific use cases that represent the activities they can perform within the system. For example, Admin is linked to use cases such as "Login," "Add Data," "Manage Products," "Edit Data," "Delete Data," "Orders," and "Reports." On the other hand, Buyers are connected to use cases like "Register," "View Products," and "Place Orders," while the Director is connected to "Manage Products" and "Reports." Each of these connections depicts the interaction between the actor and the system, as well as the functions that the actor can carry out.

The creation of this use case diagram also involves identifying clear flows between actors and the system and grouping functions based on the roles of the respective actors. This step is important to avoid overlapping access rights and ensure that each actor can only access features that correspond to their authority. For example, Buyers cannot access features that allow them to edit or delete products, as these are rights reserved for Admin or the Director. Similarly, the Director cannot place product orders, as this is entirely the responsibility of the Buyers. It is important to note that the creation of this use case diagram aims to design a system that is not only efficient but also user-friendly for all involved actors. With this diagram, the system's development can be more structured, and each party involved can better understand the expected functionalities of the system. This diagram also serves as a basis for creating more detailed usage scenarios and as a reference for system testing and validation in the next development stages.

Overall, the use case diagram is a very useful tool in the development of the information system at TEND Komputer. By clearly illustrating the interaction between actors and the system, this diagram provides a comprehensive picture of how the system will function within the existing business context. Therefore, the creation of this use case diagram is an essential step in ensuring that the developed system meets operational needs and provides maximum benefits for all parties involved.

3.2. Class Diagram

In the development of the information system at TEND Komputer, the creation of a class diagram becomes a crucial step in designing the structure and relationships between components within the system. This class diagram will illustrate various classes present in the system, along with their attributes and methods, as well as the relationships between these classes. A class diagram helps organize and group system functionalities more clearly, making further development easier and ensuring that each component can interact effectively. In this system, there are several main classes related to the actors and functionalities, such as Admin, Buyer, and Director.

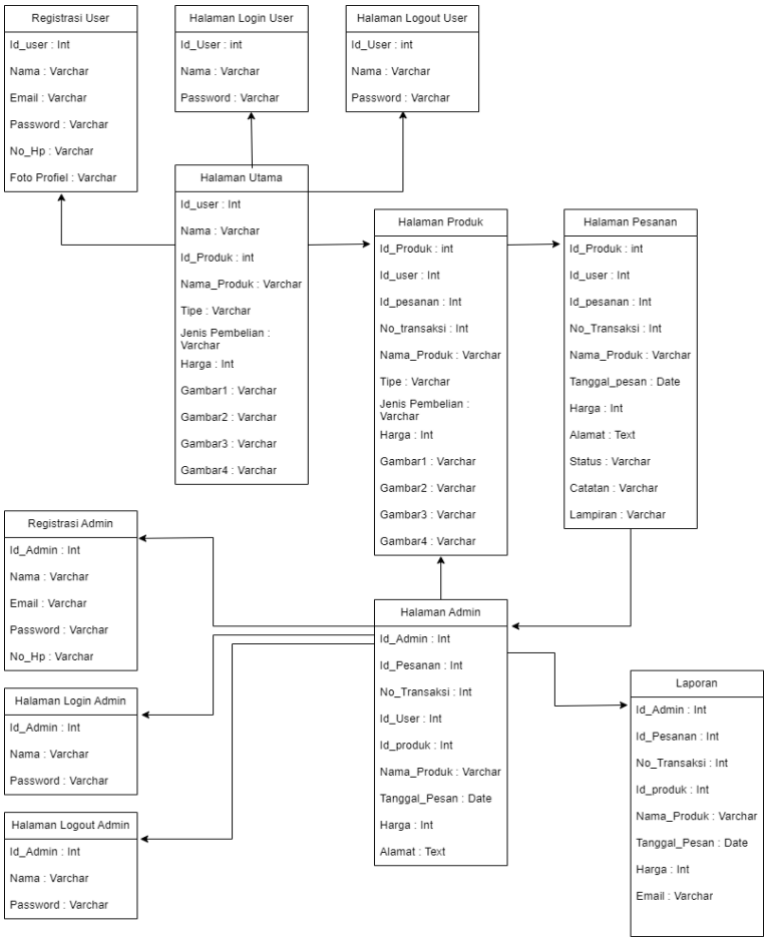

Fig. 3: Class Diagram in the Goods Inventory System.

The first class is the Admin class, which plays an important role in managing data and operations within the system. The Admin class has attributes such as username, password, and role to ensure that only authorized admins can access the system. Additionally, the Admin class has methods that allow the admin to perform various actions, such as login(), addData(), editData(), deleteData(), processOrder(), and generateReport(). These methods are used to manage product data, process transactions, and generate reports needed by management for company performance analysis. The Admin class is also connected to the Product, Order, and Report classes, which facilitate managerial functionalities related to product management and transactions. The second class is the Buyer class, which represents the users who transact with TEND Komputer. The Buyer class has attributes such as name, email, address, and phone_number, which are useful for storing customer information. The methods in the Buyer class include register(), viewProduct(), and placeOrder(). The register() method allows the buyer to sign up into the system, while viewProduct() allows the buyer to view the products available at TEND Komputer. The placeOrder() method processes the orders made by the buyer. The Buyer class is also linked to the Product and Order classes, as the buyer interacts with the available products and makes orders based on the selected products. The third class is the Director class, which supervises the management of products and reports within the system. Although the Director's role is more limited compared to the Admin, the Director class still has attributes such as username, password, and role to perform authentication and authorization. The methods in the Director class include viewProduct() and viewReport(). The viewProduct() method allows the Director to view the list of products in the system, while viewReport() provides the Director with access to sales reports generated by the Admin. The Director class is also connected to the Product and Report classes, as the Director requires information about products and sales reports to make strategic decisions.
In creating a class diagram, relationships between classes are also important to show how objects within the system interact with each other. For example, the Admin class is associated with the Product class through an association relationship, meaning the Admin can add, edit, and delete product data in the system. Additionally, the Buyer class is connected to the Product class, where the buyer can view the available products at TEND Komputer.

Furthermore, the Buyer class is also linked to the Order class because every buyer can place an order for the product they wish to purchase. The Director class is connected to the Product class to monitor the products being sold, as well as to the Report class to access the sales reports required for management. Moreover, this class diagram also shows the relationships between classes and the methods each class possesses. For instance, the Admin class has a generateReport() method, which is used to produce sales reports. These reports are then shown to the Director to monitor the performance of product sales. Additionally, the Buyer class has a placeOrder() method, which functions to process the orders made by the buyer and link them to the Order class for recording the transactions. Thus, every class in this system plays a crucial role in ensuring the system's workflow operates smoothly.
Relationships between classes in this class diagram also use inheritance relationships to illustrate class hierarchies. For example, the User class can serve as a parent class for the Admin, Buyer, and Director classes, as these three classes share common attributes such as username, password, and role. By using inheritance, the system becomes more efficient in data management and programming, reducing code duplication in each subclass. Overall, the creation of a class diagram in the development of the information system at TEND Komputer is essential for mapping out the structure and workflows within the system. This class diagram not only helps developers design the system

in a more structured manner but also allows each actor in the system to understand their roles and responsibilities. With a clear class diagram, system development can be carried out more efficiently, minimizing errors, and ensuring the system operates effectively according to the needs of users and business goals.

4. Conclusion

Effective information dissemination is one of the key factors in boosting sales, particularly in businesses like TEND Computer, which specializes in selling computer and information technology devices. TEND Computer faces challenges with a sales system that still relies on conventional methods, such as direct one-on-one interactions with potential customers or simply relying on social media platforms like Facebook and Instagram. While social media can provide information to some customers, this method proves to be less effective in reaching a wider audience and lacks efficiency in delivering detailed information about the products offered. This challenge highlights the urgent need to update and improve the information dissemination system at TEND Computer. With a modern, web-based information system, TEND Computer can extend the reach of the information it shares with customers. This information system will allow TEND Computer to display a wide range of products in a more comprehensive and detailed manner, making it easier for customers to choose according to their needs. A well-designed web platform will provide clearer product specifications, prices, and stock availability, which are crucial for customers who want to make informed purchases. The web-based sales system implemented will allow customers to make purchases directly without having to visit the physical store. This means that customers can easily access products, compare options, and complete transactions anytime and anywhere, without being limited by time or location. This convenience is a significant advantage for busy customers or those living outside the city, who may have previously found it difficult to access TEND Computer products in person. With this ease of access, it is expected that the number of customers purchasing products through the web platform will increase.

Moreover, this information system will enhance operational efficiency in managing products, processing orders, and customer service. The integrated system will simplify inventory monitoring for the admin, automate order processing, and speed up the product delivery process. Another benefit is the structured management of customer and transaction data, allowing for deeper analysis of consumer behavior and purchasing trends. This information is essential for better business planning moving forward. The detailed sales reports generated by the system also provide significant benefits for TEND Computer's management. With the system connected directly to the web platform, sales reports can be automatically and accurately generated, making it easier for managers or directors to make strategic decisions based on data. This allows TEND Computer to quickly adapt to market changes or customer preferences and plan more targeted sales strategies. Clearer transaction data also aids in inventory planning, ensuring there are no excess or shortages of stock that could harm the company.
However, it is important to note that implementing a web-based sales system requires careful planning and development phases. It is not only a technical challenge but also one of data security for customer and transaction information. As a platform that will process customer personal data and financial transactions, this system must be built with strong security measures, such as data encryption and protection against cyber threats. This aims to maintain customer trust and ensure that the online shopping experience is secure and comfortable.

Additionally, training and education for internal staff are crucial factors in the successful implementation of this system. All parties involved, from the admin to the management, must have a good understanding of how the system works and how to utilize it to enhance work efficiency and the quality of customer service. Even the most sophisticated and integrated system still requires competent human resources to manage it effectively to ensure optimal performance. Overall, the implementation of a web-based information system for sales at TEND Computer offers numerous benefits, both for customers and the company itself. With this system in place, TEND Computer is expected to increase its market competitiveness, expand its customer base, and improve operational efficiency and profitability. This also opens up opportunities for TEND Computer to grow rapidly in this digital era, as more consumers shift to online platforms to meet their technology needs.

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