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Digital Transformation at Bandung Wholesale Center: The Impact of Information Technology on Sales Performance and Experience

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***Abstract*—This study examines the impact of digital transformation on sales performance and customer experience in wholesale centers in Bandung, specifically focusing on the adoption of digital inventory management systems, electronic payment platforms, and mobile applications, including the use of TikTok and Instagram for digital marketing. The study aims to analyze how these technologies improve operational efficiency, transaction speed, and customer satisfaction in the wholesale sector. A mixed-method approach was used, combining qualitative and quantitative data. Qualitative data was obtained through in-depth interviews with 10 wholesale center owners and managers, while quantitative data was collected through a survey distributed to 200 customers. Purposive sampling was used to select wholesale centers that had adopted digital technology. The findings show significant improvements in operational efficiency, with inventory checking time reduced by 66.67% (from 12 hours to 4 hours), stock errors reduced by 66.67% (from 15% to 5%), and order fulfillment speed increased by 50% (from 2 days to 1 day). The use of TikTok and Instagram in digital marketing has expanded market reach, increased customer engagement, and raised brand awareness. In addition, electronic payment systems and mobile applications have accelerated transactions, reduced queues, and increased sales volumes. Customers reported higher satisfaction, with ease of transaction increasing by 40.63% and overall satisfaction increasing by 31.43%. This study supports existing literature on the benefits of digitalization in retail and highlights challenges such as investment costs and staff training. These findings offer important insights for the wholesale sector to embrace digital transformation to increase competitiveness in an increasingly digital marketplace.**

***Index Terms*—Digital transformation, tiktok, instagram, sales performance, customer experience, wholesale sector, operational efficiency, electronic payment systems.**

I. Introduction

Development of information and communication technology has changed many aspects of human life, including the trade sector. Digital transformation, which includes the adoption of new technologies in business operations, is now one of the key factors that can determine the success of an industry [1]. Digital technology and resultant business model innovation have fundamentally altered consumers' expectations and behaviors, putting immense pressure on traditional firms, and disrupting numerous markets. In this case, traditional trade sectors, such as wholesale centers, which have been the main place for buying and selling transactions between merchants and consumers, face major challenges adapting to the rapid technological advancements. While many business sectors have undergone digitalization, wholesale centers, many of which operate under traditional systems, are still lagging behind [2].

Digital transformation has become a necessity for wholesalers and distributors in today's fast-paced business environment. Therefore, digital transformation in grocery centers is not just about adopting new hardware and software, but also about how those technological changes can transform business processes across the board, including operational efficiency, improved sales performance, and the creation of better and more relevant customer experiences [3].

In the city of Bandung, which is one of the trading centers in Indonesia, wholesale centers are an integral part of the local economy, with significant contributions to the growth of small and medium-sized businesses (SMEs) [4]. Therefore, it is important to explore how the application of information technology can contribute to the development of wholesale centers in Bandung. This study aims to investigate the impact of digital transformation on sales performance and customer experience in Bandung's wholesale centers. Specifically, this research will assess the extent to which digital technology can improve operational efficiency in wholesale centers, speed up the transaction process, and create more positive and satisfying interactions between merchants and consumers [5].

Digital transformation in Bandung's wholesale centers is

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not only a factor that will determine business survival in the face of increasingly fierce market competition, but also opens up great opportunities to create greater added value for customers and merchants [6]. The impact of technology adoption, such as digital-based inventory management systems, the use of electronic payment platforms, and mobile-based applications that enable online purchases, needs to be studied in more depth to understand whether these conveniences contribute significantly to customer satisfaction and loyalty [7].

One of the reasons why this research is important is because there is a lack of studies that directly link digital transformation with sales performance and customer experience in the Indonesian wholesale market, especially in Bandung. Most of the existing research focuses more on the e-commerce industry, modern retail, or large companies that are already familiar with the implementation of digital technology [8]. On the other hand, wholesale centers that rely more on traditional operational systems are often overlooked in this literature. This research aims to fill this gap and provide a deeper understanding of how technology can be applied to improve the competitiveness of traditional wholesale centers in the digital era [9].

The method used in this research combines qualitative and quantitative approaches. The qualitative approach will be used to gain insights into the perceptions of merchants and customers towards the implementation of information technology in wholesale centers. Meanwhile, the quantitative approach will provide more objective data regarding the impact of technology on sales and customer satisfaction [10]. Data will be collected through surveys, in-depth interviews, and analysis of the systems used in the wholesale center. This research will also examine the use of digital-based inventory management systems, the utilization of electronic payment technologies, and mobile-based applications that can facilitate faster and more efficient interactions between merchants and consumers [11].

The results of this study are expected to make a significant contribution to the development of digitalization strategies in wholesale centers. The recommendations provided can help businesses to better utilize information technology in order to increase operational efficiency, improve customer experience, and drive better sales performance. Overall, this research will not only provide valuable insights for the development of Bandung's wholesale center, but can also serve as a reference for other wholesale centers in Indonesia to leverage digital transformation to improve their competitiveness and business survival amidst the rapid changes taking place.

II. Related Work

A. Digital Transformation Theory

Digital transformation in the traditional trade sector, including wholesale centers, involves the integration of technology to improve operations and value creation for customers. As technology evolves, wholesale centers are faced with the need to adapt to remain competitive in the market [12]. The adoption of digital technologies, such as cloud-based information management systems, data analytic software, as well as the implementation of digital payment systems, can speed up the transaction process, improve the efficiency of stock management, and simplify interactions between merchants and customers [13].

One relevant theory is the Dynamic Capabilities Theory, which explains how companies must be able to adapt quickly to technological change to survive and thrive [14]. In the wholesale sector, digital transformation enables wholesale centers to develop new capabilities, such as the integration of digital-based systems that can speed up transaction processing, improve inventory accuracy, and optimize customer experience by providing e-commerce platforms or mobile applications.

B. Modelling the Effect of Technology on Sales Performance and Customer Experience

In research on the impact of technology on sales performance and customer experience, models used in recent literature such as the DeLone and McLean Information Systems Success Model [15] and Expectation Confirmation Theory (ECT) [16] are highly relevant. The DeLone and McLean model identifies that the success of an information system, such as a payment system or an inventory management system, can be measured through several dimensions, namely system quality, information quality, and system usage which in turn affects user satisfaction and its impact on business performance.

Customer experience in the context of e-commerce or digitalization of wholesale markets can also be analyzed using the Service Quality Model [17] which measures service quality based on five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These dimensions will be used to measure the extent to which digital technology contributes to positive customer experiences in wholesale centers.

C. Performance Measurement Algorithms and Metrics

The metrics used in this study include evaluating sales performance and customer experience. For sales performance, the metrics used include transaction volume, transaction completion time, and purchase conversion rate after the implementation of digital technology [18]. To measure customer experience, the metrics used include the level of customer satisfaction measured using a Likert scale, as well as an analysis of the effect of technology adoption on loyalty and the desire to make repeat purchases [19].

Multiple regression analysis method will be used to identify the relationship between the application of digital technology (electronic payment system and digital-based inventory management) with sales performance and customer satisfaction. Research by [20] shows that regression analysis can be used to assess the influence of various technological factors on performance outcomes in the trading sector.

D. Previous Research

Some recent research is relevant to the topic of technology adoption in the trade sector and its impact on business performance and customer experience. Research by [21] shows that the use of e-commerce platforms and digital payment systems can improve operational efficiency and strengthen relationships with customers in the wholesale market. Other research by [22] emphasizes the importance of a smooth and

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effective customer experience in increasing loyalty levels and sales performance, which can be achieved through the digitalization of systems in the wholesale sector.

However, although a number of studies have highlighted the positive impact of digital technology on customer performance and experience in wholesale markets, there are research gaps that need to be examined. Most current research focuses more on the e-commerce sector and large wholesale markets, while there is still limited exploration of the influence of technology adoption on smaller traditional markets, especially in developing countries. Research by [12] identifies that the adoption of digital technology in traditional markets can improve the customer shopping experience by providing convenience, but the long-term impact on business performance and customer loyalty is not yet fully understood.

This gap opens up opportunities for further research to explore the adoption of technology in smaller traditional markets and how digitalization can affect the quality of the relationship between traders and customers. This research has the potential to provide new insights into strategies that can be applied to increase the efficiency and competitiveness of traditional markets, especially in the context of rapid technological developments.

III. Research Method

This research approach combines qualitative and quantitative methods. It involves collecting and analyzing both types of data to gain a more comprehensive understanding of a research topic.

The qualitative approach was used to explore merchants' and customers' perceptions, opinions and understanding of digital technology adoption in wholesale centers [23]. The quantitative approach was used to numerically measure the impact of digital transformation on sales performance and customer experience. The combined approach provides a more comprehensive perspective to analyse the topic.

The qualitative approach will be conducted through in-depth interviews and participatory observations to identify the challenges, advantages, and impacts of using technology in the daily operations of the wholesale center. On the other hand, the quantitative approach will collect data from surveys that focus on measuring sales performance, customer satisfaction, and factors influenced by the implementation of digital technology in wholesale centers.

Figure 1 shows the conceptual framework of the research that illustrates the relationship between the main variables studied in this research: digital transformation, sales performance, and customer experience.

A. Research Design

This research will use a descriptive and exploratory design to describe the conditions and characteristics of technology use in wholesale centers and explore the impact of digitalization on performance and customer experience. This design is suitable for understanding the phenomenon of digital transformation in depth, given that wholesale centers are still a relatively new sector in the adoption of digital technology.

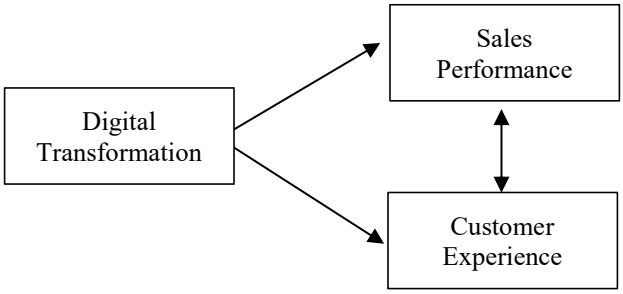

Fig. 1. Research framework.

B. Population and Sample

The population in this study is wholesale centers located in the city of Bandung that have started to adopt information technology in their operations. The research sample will be taken purposively, selecting wholesale centers that have utilized digital technology in inventory management, payment, and customer interaction. The sample respondents for in-depth interviews are the owners or managers of the wholesale centers, as well as several customers who actively shop at wholesale centers that have used the technology. For the survey, the respondents will consist of 200 customers who shop at wholesale centers that have implemented digital technology.

C. Data Collection Technique

Data collection was conducted using two main techniques, namely [24]:

1) *In-depth Interviews*
   These interviews were conducted with the owner, manager, and several merchants at the wholesale center to gain insight into the use of technology and its impact on operations and customer satisfaction. The interview questions will relate to their experience in implementing the technology as well as the challenges and perceived benefits.
2) *Surveys*
   Surveys are conducted to collect quantitative data on sales performance and customer experience. The survey will be distributed to customers of wholesale centers that have adopted the technology, using a questionnaire that contains questions related to customer satisfaction, ease of transactions, and loyalty to the wholesale center after technology implementation.

D. Data Analysis Technique

Once the data was collected, the analysis technique used consisted of two approaches [25]:

1) *Qualitative Analysis*
   Data obtained from in-depth interviews will be analyzed using thematic analysis techniques. This technique is used

to identify key patterns that emerge from the interviews, such as common challenges in technology adoption, perceptions of the technology, and its impact on business operations.

2) *Quantitative Analysis*

Data from the survey will be analyzed using descriptive and inferential statistical techniques. Multiple regression analyses will be used to evaluate the influence of technology variables on sales performance and customer experience variables. This analysis is used to determine the relationship between the application of technology (such as the use of digital inventory management systems, electronic payment platforms, and mobile-based applications) and the results obtained, such as transaction volume, transaction speed, and customer satisfaction levels. The equation used for regression analysis is as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \epsilon \quad (1)$$

In this regression model, Y is the dependent variable, which can be sales performance or customer satisfaction, which is to be analyzed. Variable X_1 represents the first independent variable, for example the use of a digital inventory management system, while X_2 represents the second independent variable, such as the use of an electronic payment platform. β_0 is a constant in the regression equation, which indicates the value of Y when all independent variables are zero. β_1 and β_2 are regression coefficients that indicate how much each independent variable affects the dependent variable Y. Finally, ϵ is the error term, which includes factors that cannot be explained by the model and affect the dependent variable. This model allows statistically measuring the extent to which the adopted technology affects performance and customer experience.

E. Validity and Reliability

To ensure the validity and reliability of the research results, several procedures will be applied. The validity of qualitative data will be tested through triangulation techniques, i.e. by comparing data obtained from interviews with data from other sources, such as observation and relevant literature. For quantitative data, reliability will be tested using Cronbach's Alpha test to measure the internal consistency of the questionnaire used in the survey. A Cronbach's Alpha value greater than 0.7 will indicate a good level of reliability [26].

IV. RESULT

Based on the results of in-depth interviews and surveys conducted with owners, managers, merchants, and customers in wholesale centers that have implemented digital technology, some of the key findings that emerged are as follows:

A. Improved Operational Efficiency

The use of a digital-based inventory management system was shown to improve efficiency in stock management. Owners and managers of wholesale centers reported a reduction in human error in stock recording as well as ease in checking and reordering goods. The implementation of this technology accelerates operations that were previously done manually, allowing merchants to reduce the time needed in the inventory process.

Table 1.
Efficiency Improvement Survey Results

Technology Aspects	Before Technology Adoption	After Technology Adoption	Percentage Increase (%)
Inventory check time	12 hours	4 hours	66.67%
Errors in stock recording	15%	5%	66.67%
Speed of reordering goods	2 days	1 day	50%

B. The Role of Information Technology in Improving Marketing and Sales at the Bandung Wholesale Centre

The application of digital marketing through TikTok and Instagram in Bandung wholesale centres is part of a digital transformation that focuses on utilising information technology to improve sales performance and experience. This strategy aims to increase the competitiveness of wholesale centres in a market that is increasingly dependent on digital technology. TikTok and Instagram not only function as product promotion platforms, but also as tools to expand market reach and increase direct customer engagement, which is at the core of digital transformation in the retail sector.

In the context of sales performance, TikTok, with its creative and dynamic short videos, effectively reaches young audiences and utilises trending music and popular hashtags to increase brand awareness and product exposure. This contributes to increased sales through wider interaction and greater exposure to audiences who may not have been familiar with the wholesale centre before. Meanwhile, Instagram, known as a visual platform, gives wholesale centres the opportunity to display products in a more attractive way through high-quality photos and informative captions. The use of features such as Instagram Stories and IGTV allows the wholesale centre to interact in real-time with customers, providing a more enjoyable shopping experience and speeding up the transaction process.

In addition, these two social media platforms have also proven their effectiveness in expanding the market reach of the Bandung wholesale centre. Currently, the wholesale centre has almost 90 thousand followers on Instagram and around 13 thousand followers on TikTok (Fig. 2 and 3). This large number of followers shows how effective the implementation of digital marketing strategies is in attracting audiences and building relationships with a wider customer base. Through the interaction that takes place on these two platforms, the wholesale centre can increase brand awareness and turn audiences into more loyal customers.

This digital transformation is also reflected in the use of paid advertising campaigns tailored to the demographics, interests, and locations of the audience on both platforms, which increases sales conversions. Evidence of implementation can be seen in various TikTok and Instagram posts that show the latest products with special offers, discounts, or event promotions that can trigger buying interest. In this case, information technology helps the Bandung wholesale centre

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not only to expand its market reach, but also to increase customer engagement, speed up the transaction process, and increase sales volume.

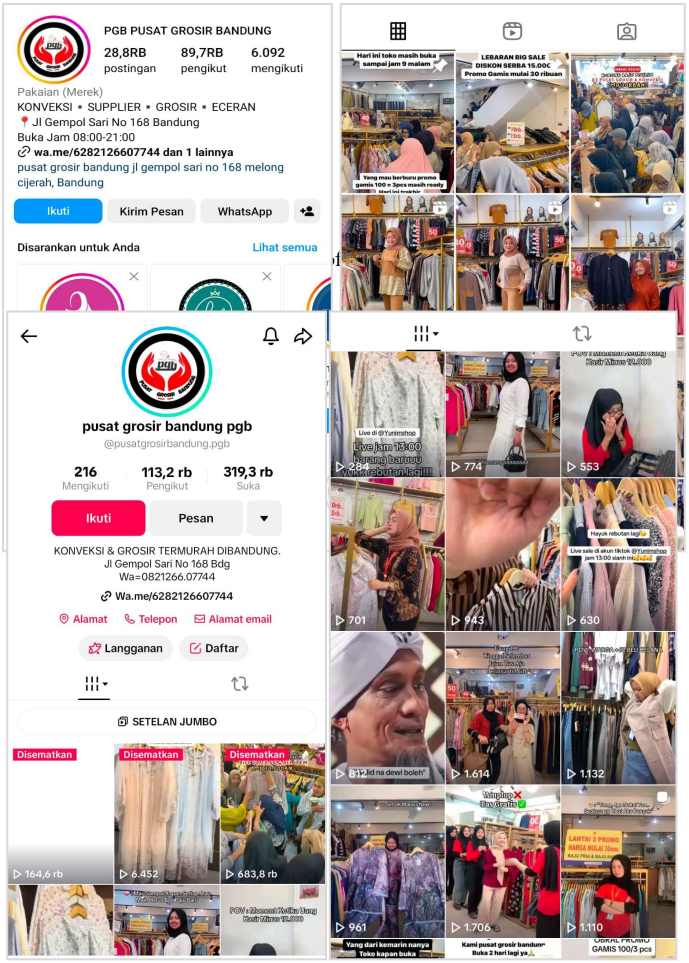

Fig. 3. Instagram profile of bandung wholesale center.

Overall, the application of digital marketing through TikTok and Instagram plays an important role in the digital transformation process that is taking place at the Bandung wholesale centre. This has a positive impact on sales performance and customer experience, creating a sustainable competitive advantage in a market that is increasingly driven by information technology.

C. *Sales Performance Improvement*

Most merchants reported that the implementation of e-payment platforms and mobile-based applications simplified transactions and accelerated purchase turnaround times. The use of these digital platforms helped reduce long queues and speed up the transaction process, contributing to increased sales volume. This finding is in line with research conducted by [27], which showed that e-payments improve transaction efficiency and reduce delays.

D. *Improved Customer Experience*

Customers shopping at grocery centers that have embraced digital technology report increased satisfaction with ease of transactions and speed of service. The use of mobile apps to order goods online allows customers to avoid crowds at grocery centers, increasing their convenience. In addition, various digital payment options provide a sense of security and convenience for customers.

Table 2.
Customer Satisfaction Survey Results

Dimensions of Customer Experience	Before Technology Adoption	After Technology Adoption	Percentage Increase (%)
Ease of transaction	3.2/5	4.5/5	40.63%
Speed in transaction	3.0/5	4.2/5	40.00%
Overall satisfaction	3.5/5	4.6/5	31.43%

E. *Discussion*

The results of this study reveal several important findings regarding the application of digital technology in Bandung's wholesale centers, which significantly improve operational efficiency, marketing and customer experience. These findings support the hypothesis that the adoption of digital technology can have a significant impact on sales performance and customer experience, as well as providing a competitive advantage for wholesale centers that implement it. These findings also enrich the existing literature, especially regarding the digitalization of the wholesale sector, which has received insufficient attention in previous research.

One of the main findings of this study is the significant increase in operational efficiency after the implementation of a digital inventory management system. The use of digital technology reduces human error in stock recording and speeds up the process of checking and reordering goods. The survey results show that inventory checking time, which previously took 12 hours, now only takes 4 hours, reducing time by 66.67%. In addition, the reduction in stock recording errors from 15% to 5% (an increase of 66.67%) shows that digital-based systems not only improve control but also reduce the potential for errors in operational processes. These findings are consistent with research by [28], which shows that digitalization can improve operational efficiency and reduce transaction costs in traditional wholesale markets. This is important because previous manual processes were often a major obstacle in wholesale centre operations.

The adoption of technology in inventory management has proven to be not only efficient, but also more precise in responding to changing market needs, which is also reinforced by the Digital Transformation theory which argues that the

application of digital technology encourages the empowerment of internal processes and accelerates decision making.

In terms of marketing and sales, these findings show how digital platforms such as TikTok and Instagram have changed the marketing strategy at the Bandung wholesale centre. Digital marketing through these two platforms not only serves to introduce products, but also to expand market reach and increase direct customer engagement. Survey data showing nearly 90 thousand followers on Instagram and 13 thousand followers on TikTok illustrates the success of the wholesale centre in attracting a wider audience and building closer relationships with customers.

TikTok, with its creative short videos, effectively reaches a young audience through music and popular hashtags, which has been proven to increase brand awareness and product exposure. On the other hand, Instagram allows wholesale centers to display products in a more attractive way through high-quality photos and informative captions, while features such as Instagram Stories and IGTV allow for real-time interactions that enhance the customer shopping experience. These findings are in line with research by [29], which shows that digital marketing can expand markets and improve sales performance.

However, although these two digital platforms are already quite effective, there is a gap in the use of paid advertising technology tailored to the audience's demographics, interests, and location. Although paid advertising campaigns have been proven effective in increasing sales conversions, their long-term cost-effectiveness still needs to be studied further. Further research could explore the extent to which advertising campaigns can have a greater impact on profitability in the wholesale sector, especially in the context of digital marketing.

The implementation of electronic payment platforms and mobile-based applications also has a major impact on improving sales performance. Most traders report that electronic payment systems speed up transactions and reduce the long queues that are often an obstacle. This finding is in line with research by [30], which shows that electronic payment systems reduce delays and speed up the purchasing process. The increased transaction speed not only reduces waiting time, but also increases sales conversion, which is in line with the Technology Acceptance Model (TAM) theory, which states that ease of use and trust in technology play a major role in the successful adoption of technology. The use of mobile applications for online shopping provides more convenience for customers, increases their loyalty to wholesale centers and reinforces the importance of user experience in influencing customer satisfaction.

The importance of the customer experience is another key finding in this study. Customers who shop at wholesale centers that have adopted digital technology report a significant increase in their satisfaction, influenced by the ease of transactions and speed of service. The increase in customer satisfaction from 3.5/5 to 4.6/5 shows that the adoption of digital technologies directly improves the shopping experience. This finding is in line with research by [31], which identifies that speed and ease of transactions are important factors affecting customer satisfaction in retail. The Customer Experience Management (CEM) theory also supports this finding, stating that a positive customer experience has a direct impact on market loyalty and retention.

This research fills a gap in the existing literature, especially in relation to the digitalization of the wholesale sector, which often receives less attention than the modern retail and e-commerce sectors. Although much research has been conducted on digitalization in the retail sector, this study provides new insights that digital transformation in wholesale centers not only accelerates sales growth, but also improves operational efficiency and modernizes stock management systems. Therefore, this research makes a significant contribution to understanding how technology can increase the competitiveness of wholesale centers in a market that is increasingly driven by digital technology.

However, there are still challenges in the costs of investment and training of human resources (HR) in the implementation of digital technology. This is a major concern for policy makers and business people to plan a sound strategy in terms of costs and training so that the implementation of technology can take place in a sustainable and efficient manner. Further research needs to expand the scope of this study to wholesale centers in other regions and explore in more depth the impact of the application of advanced technologies such as ERP or big data in modernizing the wholesale sector.

In addition, further research could explore the deeper relationship between customer satisfaction and long-term loyalty in the context of digitalization, in order to provide a more in-depth understanding of the long-term potential that can result from the adoption of technology in the wholesale sector. The research could also utilize the TOE Framework for E-Commerce Adoption by MSMEs during The COVID-19 Pandemic: Can Trust Moderate ? [34], which provides insights into the adoption of technology by MSMEs in the context of a pandemic. Other research, such as easily determining post-study system usability for anime community e-commerce analysis [35], as well as research on the calculation of business-to-business potential sales with data from county business patterns and end-user industry sales data [36], and the choice of after-sales service channels for electric vehicle supply chain with battery recycling [37], can also provide a broader perspective on the application of technology in the business sector.

V. CONCLUSION

This study has revealed that the application of digital technology in the Bandung wholesale centre has had a significant impact on operational efficiency, marketing and customer experience. The implementation of a digital inventory management system has been proven to reduce human error in stock recording, speed up inventory checking times, and improve more accurate control over goods inventory.

In addition, the adoption of digital platforms such as TikTok and Instagram has transformed the way marketing and sales are conducted, broadened market reach, and increased customer engagement. The adoption of electronic payment systems and mobile-based applications has also accelerated transactions, increased sales volumes, and provided a more convenient shopping experience for customers.

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Overall, this study confirms that digital transformation in the wholesale sector can accelerate sales growth, improve operational efficiency, and provide a better customer experience, which in turn increases the competitiveness of wholesale centers in a market increasingly influenced by digital technology. However, this study also identifies several challenges, such as the initial investment costs for technology and training of human resources (HR) required for technology implementation. Therefore, to ensure long-term success, careful planning regarding investment and training is needed.

Future research can expand the scope of this study to wholesale centers in other regions, as well as explore the application of advanced technologies such as ERP and big data, to understand their impact on wholesale management systems more comprehensively.

This research provides new insights into the importance of digitizing the wholesale sector, a topic that has previously received less attention compared to the modern retail and e-commerce sectors, and can serve as a reference for further development in this field.

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