

EVALUATION OF THE FARMACARE POINT OF SALE (POS) SYSTEM ON THE NUMBER OF TRANSACTIONS, TRANSACTION VALUE, AND MONTHLY REVENUE OF A PRIVATE PHARMACY IN GIANYAR, BALI

I Made Krisnawan Putra¹, Titien Siwi Hartayu²

Master of Pharmacy Program, Faculty of Pharmacy, Universitas Sanata Dharma, Indonesia

E-mail: krisnawanputra87@gmail.com

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Abstract

The use of information technology in pharmacy management, such as Point of Sale (POS) systems, is part of digital transformation. Desktop-based POS applications are considered less up to date with the current needs of modern pharmacies; therefore, to improve efficiency, the pharmacy replaced the desktop-based POS with the web-based Farmacare POS system. This study aimed to evaluate the effect of the Farmacare POS on the average number of transactions, the average transaction value, and monthly revenue in a private pharmacy in Gianyar, Bali. This research employed a quasi-experimental design using a one-group pretest–posttest approach. The data were obtained from pharmacy sales transaction reports for six months before and six months after the implementation of the Farmacare POS. Data analysis was conducted using the Shapiro–Wilk normality test, followed by the Paired Sample T-Test and the Wilcoxon Signed Rank Test with a significance level of 0.05. The results showed a significant increase in the average number of transactions ($p = 0.028$) and monthly revenue ($p = 0.032$) after the implementation of the Farmacare POS, while the average transaction value increased but was not statistically significant ($p = 0.065$). Descriptively, the average number of transactions increased by approximately 5%, the average transaction value increased by 10.6%, and monthly revenue increased by 14.5%. Therefore, it can be concluded that the Farmacare POS system is able to improve the average number of transactions and monthly revenue, and thus can be regarded as an effective managerial support tool.

Keywords: *Point of Sale; Farmacare; Number of Transactions; Transaction Value; Monthly Revenue.*

INTRODUCTION

A pharmacy, according to the Regulation of the Minister of Health of the Republic of Indonesia Number 73 of 2016 concerning Pharmaceutical Service Standards in Pharmacies, is a pharmaceutical service facility where pharmaceutical practice is carried out by a pharmacist. Pharmacy management involves various complex aspects, ranging from drug inventory management, recording sales transactions, to financial reporting. With increasing competition and market demands, pharmacies are required to maintain operational efficiency and improve service quality for customers (Peralta, 2021). The use of information technology is one solution to address these challenges. One form of information technology implementation in pharmacies is the use of a Point of Sale (POS) system. A POS system is part of digital transformation in retail business management, including pharmacies, which functions to automate sales transaction processes, inventory management, and financial reporting (Laudon & Laudon, 2018). Dian Saputra (2022) reported that weak internal control systems for drug inventory in a pharmacy in Pekanbaru caused many expired drugs to go undetected and a high rate of drug loss, resulting in significant financial losses. Gabriela and Halim (2023) also found that manual recording of transactions and drug inventory frequently led to recording errors, pricing miscalculations, and discrepancies between financial reports and actual cash and physical stock conditions. Along with technological development, POS systems are no longer only desktop-based but have evolved into web-based (cloud-based POS) systems. Web-based POS systems have advantages in terms of accessibility, real-time data updates, reporting flexibility, and better data integration compared to desktop-based POS systems (PT Guestpro Teknologi Indonesia, 2023). One web-based POS application specifically designed for pharmacies is Farmacare. Farmacare provides features such as stock management, real-time transaction recording, batch and expiration date management, stock opname without closing the store, automatic defecta, and integrated financial reports. This application is designed to suit pharmacy operational needs and applicable pharmaceutical regulatory standards. It is expected to improve operational efficiency, recording accuracy, and support data-driven

managerial decision-making (PT Jendela Akses Sehat, 2024). Research related to POS systems still tends to focus on technical aspects, such as system development, ease of use, and user acceptance levels (Maulana et al., 2023). Studies that directly link the use of POS systems with pharmacy sales performance indicators quantitatively are still limited. For pharmacy managers, the success of implementing information technology is not only measured by ease of use but also by its impact on improving sales performance and business revenue. This study seeks to fill this research gap by evaluating the effect of implementing the Farmacare POS system on private pharmacy sales performance indicators measured quantitatively, namely average number of transactions, average transaction value, and monthly revenue, using a quasi-experimental one-group pretest–posttest design. Based on this background, this study aims to evaluate the effect of the Farmacare POS application in improving the effectiveness and performance of pharmacy sales by examining the average number of transactions, average transaction value, and total monthly revenue before and after the use of the web-based Farmacare POS application in a private pharmacy in Gianyar Regency, Bali.

THEORETICAL FRAMEWORK AND EMPIRICAL STUDIES

Management information systems play an important role in supporting organizational operational effectiveness, including pharmacy management. These systems enable the collection, processing, storage, and presentation of information in an integrated manner to support managerial decision-making (Laudon & Laudon, 2018). The implementation of a good information system can improve work efficiency, data recording accuracy, and service quality for customers (Peralta, 2021; Brown & Johnson, 2018). Point of Sale (POS) is part of a management information system that functions as the main point for recording sales transactions. POS does not only serve as a payment tool but also as a system capable of managing transaction data, inventory, and financial reports in an integrated manner (Rokhman, 2012). In the context of pharmacies, POS has a strategic role because it supports drug management that requires high accuracy, including stock control and precise transaction recording (Gabriela & Halim, 2023).

POS systems are generally divided into two types: desktop-based POS and web-based POS. Desktop-based POS has limitations in accessibility because it can only be used on certain devices where the application is installed and has limited flexibility in updating and presenting data (PT Opaper International Indonesia, 2024). In contrast, web-based POS allows system access from various devices as long as they are connected to the internet, supports real-time data updates, and provides faster and more integrated reports (PT Guestpro Teknologi Indonesia, 2023). These advantages make web-based POS more adaptive to the operational needs of modern pharmacies. Farmacare is one web-based POS application specifically designed to support pharmacy operations. This application provides various features, including drug stock management, real-time transaction recording, batch and expiration date management, automatic defects, stock opname without closing the store, and integrated financial reports (PT Jendela Akses Sehat, 2024). These features are expected to improve operational efficiency, reduce recording errors, and support more accurate data-based managerial decision-making.

Previous empirical studies show that the implementation of POS systems has a positive impact on pharmacy operational performance. Nugraha (2021) states that the use of POS can improve transaction recording efficiency and speed up customer service processes. Gabriela and Halim (2023) also found that POS systems designed according to user needs can reduce transaction and inventory recording errors and improve the accuracy of financial reports. Yulianto and Setyawan (2023) state that fast and accurate POS systems create positive customer experiences due to shorter waiting times and transparent service. In addition, Dian Saputra and Abrar (2022) emphasize that good inventory management systems play an important role in reducing the risk of stock loss and expired drugs, which ultimately impacts pharmacy operational cost efficiency. Previous studies still tend to emphasize technical aspects of systems, such as ease of use, user acceptance levels, and POS system development, rather than their impact on pharmacy sales performance quantitatively. Research that directly connects POS usage with sales performance indicators such as number of transactions, transaction value, and revenue remains relatively limited.

This study measures pharmacy sales performance using three main indicators: number of transactions, transaction value, and monthly revenue. The number of transactions reflects the level of pharmacy service activity and customer visit intensity. Transaction value indicates the average amount spent by customers per transaction, which may reflect the effectiveness of inventory management and product completeness. Meanwhile, monthly revenue describes the total pharmacy income within a period and serves as the main indicator of financial performance. The theoretical review and findings of previous studies serve as empirical references suggesting that the implementation of web-based POS systems such as Farmacare can affect pharmacy sales performance through improved service efficiency, transaction recording accuracy, and inventory management quality. Service efficiency

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has the potential to increase the number of transactions, better inventory management can increase transaction value, and the combination of both will impact increased monthly revenue.

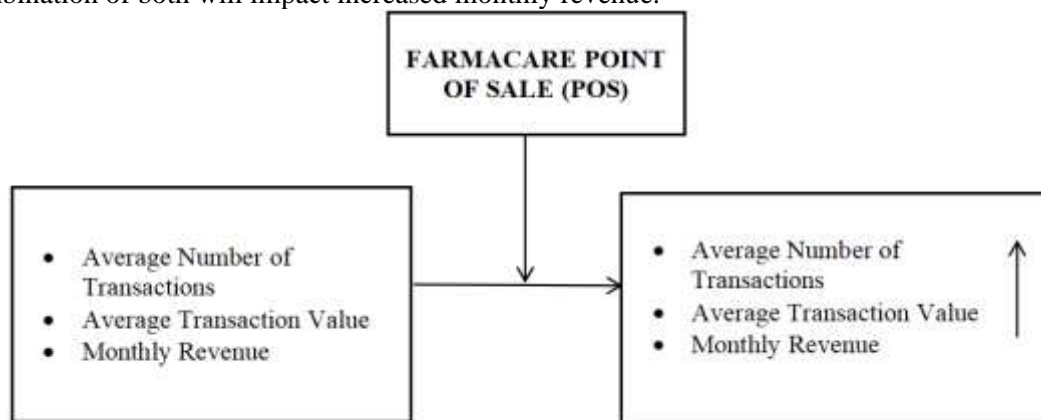


Figure 1. Theoretical Framework

The research framework assumes that the implementation of the Farmacare POS system as an independent variable is related to increased pharmacy sales performance, as measured by three dependent variables: average number of transactions, average transaction value, and monthly turnover. This framework serves as the basis for quantitatively examining differences in private pharmacy sales performance before and after the implementation of the Farmacare POS system.

METHOD

This study is a quasi-experimental study using a one-group pretest–posttest design without a control group. The research was conducted at a private pharmacy in Gianyar Regency, Bali. Data collection was carried out over two observation periods, namely six months before the implementation of the Farmacare application and six months after, with the research period spanning from May 2023 to April 2024. The data used in this study were obtained from the pharmacy’s daily transaction reports generated by a desktop-based POS system in the pre-implementation period and a web-based Farmacare POS system in the post-implementation period. All transaction data were exported in Microsoft Excel format for further processing and analysis. The independent variable in this study is the use of the Farmacare POS application, while the dependent variables include the average number of transactions per month, the average transaction value per month, and the total monthly revenue. The average number of transactions was calculated based on the total daily transactions divided by the number of operational days in a month, while the average transaction value was obtained by dividing total monthly revenue by the number of transactions in the same month. Total monthly revenue was calculated as the accumulation of daily sales values over one month. The collected data were then filtered based on inclusion and exclusion criteria. The inclusion criteria were transactions recorded in the desktop POS application and the Farmacare POS application during full pharmacy operating hours (08:00–22:00 WITA). The exclusion criteria were inventory adjustments during stock opname (items showing discrepancies such as surplus or shortage during stocktaking) recorded in both the desktop POS application and the Farmacare POS application. Quantitative analysis began with a normality test using the Shapiro–Wilk method. Data with normal distribution were analyzed using the Paired Sample T-Test, while non-normally distributed data were analyzed using the non-parametric Wilcoxon Signed-Rank Test. All statistical analyses were conducted at a significance level of 0.05.

RESULTS AND DISCUSSION

Results

In the period prior to the implementation of the web-based POS application Farmacare (May–October 2023), the average number of transactions ranged from 85 to 89 transactions, with monthly revenue between 66 million and 72 million rupiah. The average transaction value during this period ranged from IDR 25,000–27,000 per transaction. When the Farmacare POS application was implemented (November 2023–April 2024), the average number of daily transactions ranged from 86 to 95 transactions, with revenue between 71 million and 88 million rupiah and an average transaction value ranging from IDR 27,000–32,000 per transaction. Sales data can be seen in Table 1. The average number of transactions increased by approximately 5%, the average transaction value increased by 10.6%, and the

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average revenue increased by 14.5% after the implementation of the Farmacare application. The percentage increases can be seen in Table 2.

Table 1. Pharmacy Sales Data May 2023–April 2024

Month	Period	Days	Number of Transactions	Revenue (IDR)	Average Number of Transactions	Average Transaction Value (IDR)
May-23	Before	31	2633	68,226,779	85	25,912
Jun-23	Before	30	2665	70,486,867	89	26,449
Jul-23	Before	31	2765	71,063,650	89	25,701
Aug-23	Before	31	2671	72,362,630	86	27,092
Sep-23	Before	30	2543	66,140,429	85	26,009
Oct-23	Before	30	2563	68,123,657	85	26,580
Nov-23	After	30	2599	71,939,012	87	27,679
Dec-23	After	31	2939	79,486,465	95	27,045
Jan-24	After	31	2716	75,024,903	88	27,623
Feb-24	After	29	2535	75,532,950	87	29,796
Mar-24	After	31	2951	88,938,257	95	30,138
Apr-24	After	30	2663	86,078,210	89	32,324

Table 2. Percentage Change in Average Number of Transactions, Transaction Value and Turnover

No	Variable	Period	Lowest	Highest	Average	(%) Increase
1	Average Number of Transactions	Before	85	89	86	5
		After	85	95	90	
2	Average Transaction Value	Before	25,701	27,092	26,291	10.6
		After	27,045	32,324	29,101	
3	Revenue	Before	66,140,429	72,362,630	69,400,669	14.5
		After	71,939,012	88,938,257	79,499,966	

Data analysis began with a normality test using the Shapiro–Wilk method. Based on the results of the Shapiro–Wilk normality test, there was one non-normally distributed data item, namely the average number of transactions, with a significance value of 0.042 ($p < 0.05$), and therefore considered non-normally distributed. Therefore, further analysis was conducted using the Wilcoxon Signed-Rank Test for this variable, while for variables with a normal distribution, the Paired Sample T-Test was used. The results of the Shapiro–Wilk normality test are shown in Table 3.

Table 3. Results of the Data Normality Test (Shapiro–Wilk)

No	Variable	Period	P-Value
1	Average Number of Transactions	Before	0.217
2	Average Transaction Value	Before	0.485
3	Revenue	Before	0.806
4	Average Number of Transactions	After	0.042
5	Average Transaction Value	After	0.385
6	Revenue	After	0.492

The Wilcoxon Signed-Rank Test results for the average number of transactions showed a significance value of 0.028 ($p < 0.05$). This indicates a significant difference between the periods before and after the Farmacare POS application was implemented. This increase indicates a significant increase following the use of the Farmacare POS application. The results of the Wilcoxon Signed-Rank Test are shown in Table 4.

Table 4. Wilcoxon Signed-Rank Test Results

No	Variable	P-Value
1	Average Number of Transactions (Before–After)	0.028

The results of the Paired Sample T-Test, conducted by comparing the average transaction value before and after the observation, showed a positive trend for the average transaction value but not yet statistically significant ($p = 0.065$), while the average turnover variable before and after the observation showed a statistically significant change ($p = 0.032$). The results of the Paired Sample T-Test can be seen in Table 5.

Table 5. Paired Sample T-Test Results

No	Variable	P-Value
1	Average Transaction Value (Before–After)	0.065
2	Revenue (Before–After)	0.032

Discussion

The results of this study indicate that the implementation of the web-based Farmacare Point of Sale (POS) system significantly improved the sales performance of private pharmacies, as measured by the average number of transactions ($p=0.028$), average transaction value ($p=0.065$), and monthly turnover ($p=0.032$). This finding aligns with the concept of management information systems, which states that computerized systems can improve operational effectiveness and data management quality (Laudon & Laudon, 2018). An integrated system enables faster, more accurate, and more structured work processes. The increase in the average number of transactions after the implementation of Farmacare POS indicates a more efficient service process. Prior to the Farmacare POS application, pharmacies relied on conventional desktop applications with limitations in product search and transaction processing. After the implementation of the web-based POS system, item searches became faster, stock integration was automated, and the cashier process became more streamlined. The application's flexibility, accessible from anywhere, also allows each employee to provide product information more quickly and efficiently. Thus, these results directly impact the speed of service delivery, allowing for an increase in the number of customers served per day. Peralta (2021) states that digitizing service systems can accelerate workflows and improve the quality of customer service. Faster and error-free transaction processes also have the potential to increase customer satisfaction (Brown & Johnson, 2018), thus driving increased transaction activity at pharmacies. Customers will return to the pharmacy, leading to an increase in sales transactions. The results of this study strengthen the evidence that using the Farmacare POS application can increase the average number of transactions at pharmacies.

Data on the average transaction value shows an increase after implementing the Farmacare POS application, but the results were not statistically significant. This suggests that the Farmacare POS application influences the average number of transactions more than the average transaction value. The Farmacare POS application accelerates processes and reduces recording errors, but does not directly change patient purchasing behavior. In the context of pharmaceutical consumer behavior, purchasing decisions are more influenced by the patient's medical needs and financial capabilities, rather than the transaction system used. This phenomenon aligns with research by Hailal (2022), which shows that implementing digital systems increases satisfaction and efficiency, but does not necessarily increase the purchase value per customer in the short term. While not statistically significant, this upward trend remains significant as it indicates long-term growth potential. The Farmacare POS application has reporting and data analysis features that enable management to identify products with the highest sales levels. This information can be used to develop upselling or product bundling strategies, thereby gradually increasing the average customer transaction value.

The increase in monthly turnover is the cumulative effect of the increasing number of transactions and their value. The significant increase in monthly turnover after implementing the Farmacare POS application reflects the tangible impact of digitalization on the pharmacy's financial performance. Automatic integration between transactions, stock, and reporting minimizes recording errors and lost sales. Prior to this system, pharmacies frequently experienced discrepancies between physical and system inventory, leading to stockouts and lost sales opportunities. After implementing the Farmacare POS application, all stock data is updated in real time after each transaction. In the context of pharmacare, the minimum stock notification feature allows pharmacies to take swift action to replenish high-selling products. Research by Ferdian (2024) shows that the use of a web-based POS improves reporting accuracy and accelerates stock rotation, which directly impacts increased monthly turnover. Akhsanuddin et al. (2024) added that the implementation of an accounting information system significantly impacts a company's financial performance. This confirms that the implementation of an information technology-based system can improve the effectiveness of financial management and support improved business performance. In the

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context of pharmacies, the implementation of Farmacare POS plays a similar role as an information system that helps improve the accuracy of transaction recording and the quality of financial reports, thus positively impacting sales turnover. Thus, the increase in turnover in this study is concrete evidence that the implementation of a web-based management information system brings measurable financial benefits to pharmacies.

CONCLUSION

Based on the research results, the Farmacare POS application increased the average number of transactions from approximately 86 transactions per day in the period before the use of Farmacare POS to approximately 90 transactions per day in the period after its use, an increase of approximately 5%, and this difference was statistically significant ($p = 0.028$). Pharmacies' monthly turnover also increased significantly, from an average of Rp 69,400,669 per month before the use of Farmacare POS to Rp 79,499,966 per month after its use, an increase of 14.5% ($p = 0.032$). Meanwhile, the average transaction value increased from Rp 26,291 per transaction before the use of Farmacare POS to Rp 29,101 per transaction after its use, an increase of 10.6%, but this increase was not statistically significant ($p = 0.065$). Thus, it can be concluded that the Farmacare POS system can be utilized to improve sales performance in pharmacies, particularly in terms of the number of transactions and monthly turnover, and effectively supports management in improving transaction management efficiency and sustainability in the pharmacy business.

RECOMMENDATIONS

Pharmacy managers are advised to optimally utilize web-based POS systems like Farmacare to improve operational efficiency and sales performance. Future researchers are advised to increase the number of research subjects and include other variables, such as customer satisfaction levels, service speed, or inventory management effectiveness, so that the results can provide a more comprehensive picture.

LIMITATIONS

This study has several limitations. First, it was conducted in only one private pharmacy, which limits the generalizability of the findings. Second, the study employed a one-group pretest–posttest design without a control group; therefore, causal inference should be interpreted cautiously. External factors such as seasonal sales variation, promotional activities, changes in staffing, or broader economic conditions may have influenced the observed changes. Third, the observation period was limited to twelve months, which may not fully capture long-term effects of POS implementation. Future research with a multi-site design and longer observation period is recommended to strengthen causal interpretation.

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