

THE ROLE OF VILLAGE-LEVEL ECONOMIC DIGITALIZATION IN OPTIMIZING MSMEs IN NORTH ACEH; A CASE STUDY OF THE “KASIRAJA!” WEBSITE

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) are the backbone of Indonesia's economy, with approximately 64.2 million business units contributing 61.07% to the national Gross Domestic Product (GDP) and absorbing 97% of the national workforce. However, despite their significant role, many MSMEs, particularly in North Aceh, still rely on manual record-keeping systems that are time-consuming, prone to errors, and hinder effective reporting. This condition reduces operational efficiency and weakens competitiveness in the digital era. This study offers a solution through the development of “KasirAja!”, a web-based cashier system designed to meet the needs of local MSMEs. By employing questionnaire methods and conducting system trials with business owners, this research analyzes the limitations of manual record-keeping and evaluates the effectiveness of a digital system in improving transaction speed, report accuracy, and user satisfaction. The expected outcome of this research is not merely the development of a cashier application, but the introduction of a transformative solution for MSMEs in North Aceh that enables faster, more organized, transparent, and modern business management. Through “KasirAja!”, MSMEs are expected to focus more effectively on strategic development, market expansion, and service improvement. Therefore, this study contributes not only a technological innovation but also a concrete effort to strengthen the village-level economy and prepare MSMEs in North Aceh to compete at the national and international levels.

Keywords: *MSMEs, Digital Transformation, Web-Based, Financial, Business Efficiency.*

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a vital role in supporting Indonesia's economy. According to data from the Ministry of Cooperatives and MSMEs, the number of MSMEs in Indonesia has reached approximately 64.2 million units. This sector contributes significantly to the Gross Domestic Product (GDP), accounting for 61.07% or around IDR 8,573.89 trillion. In addition, MSMEs play a major role in employment absorption, accounting for approximately 97% of the total workforce, and contribute about 60.4% of total national investment. Despite their substantial contribution, the large number of MSMEs in Indonesia is accompanied by various challenges that need to be addressed, including those faced by MSMEs in Aceh, particularly in North Aceh (KKBPRI, 2021).

MSMEs also play an important role in reducing poverty within communities. This sector has a high capacity for employment absorption, thereby providing job opportunities for those in need. Furthermore, MSMEs contribute to the increase of national foreign exchange earnings, as their products are not only marketed locally and nationally but are also able to penetrate international markets (DisKopUKM, 2023). MSMEs serve as a fundamental pillar of the village-level economy, supporting community welfare. However, in daily practice, many MSMEs continue to face various obstacles, particularly in financial management, transaction recording, and sales data management, which are often conducted ineffectively. In North Aceh, most MSME actors still rely on manual methods to record cashier transactions, such as handwritten records or the use of simple, non-integrated applications. These practices frequently result in problems such as recording errors, difficulties in monitoring transactions, and delays in preparing financial reports. Such conditions can hinder business growth, reduce operational efficiency, and even cause undetected financial losses. Along with the rapid development of

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technology in Indonesia, the adoption of website-based systems has continued to increase. One such system is a web-based cashier website with integrated financial recording, which can address the challenges faced by MSMEs in North Aceh. A cashier website can support various aspects of business operations, including transaction recording, sales report generation, and systematic analysis of business development. The use of this system enables MSME business management to become faster, more accurate, and more organized. For MSMEs in North Aceh, the implementation of a cashier website is not merely a step toward modernization but also a strategic effort to enhance competitiveness while strengthening the village-level economy. The efficiency gained allows business owners to focus more on strategic planning, market expansion, and service quality improvement. Therefore, this study aims to develop a cashier website as a solution to improve the operational efficiency of MSMEs in North Aceh.

This study analyzes the conditions of transaction recording and financial management practices used by MSMEs in North Aceh, identifies the constraints arising from manual systems, and designs and develops a cashier website that aligns with the needs of local MSMEs. The website provides features for transaction recording and sales report generation to improve business efficiency. To support the research, data were collected from MSMEs through questionnaires distributed to business owners. The questionnaires included questions related to the number and characteristics of the businesses, challenges in transaction recording, and responses to the implementation of the cashier website within the research context. These responses were used to measure transaction recording speed, report accuracy, and user satisfaction levels. Thus, this study not only produces a web-based cashier system but also offers a tangible contribution to strengthening the competitiveness and village-level economy in North Aceh.

LITERATURE REVIEW

A cash register system is designed to facilitate the management of financial transactions across various types of businesses, including retail stores, restaurants, and supermarkets. Its primary functions include recording transactions, processing payments, managing inventory, and automatically generating financial reports. Along with technological advancements, traditional cash register systems have evolved into web-based and application-based platforms that enhance operational efficiency and minimize the potential for human error. Digital transformation in this study refers to the integration of cloud-based financial documentation, automated transaction systems, and accounting software that allows for real-time supervision and precise financial reporting. The research adopted a quantitative methodology using a survey design, in which data were gathered from 150 MSME owners and financial personnel through structured questionnaires. Prior to analysis, the research instruments were assessed to ensure their validity and reliability. Structural Equation Modeling (SEM) with SmartPLS was then employed to evaluate the influence of digital transformation on financial transparency and accountability.

The results reveal that digital transformation exerts a strong and statistically significant effect on financial transparency, reflected by a path coefficient of 0.876, as well as on accountability, which shows a path coefficient of 0.737. Additionally, the R-square values of 76.7 percent for transparency and 54.4 percent for accountability indicate that digital transformation plays a major role in strengthening financial governance. Further findings indicate that the adoption of automated accounting applications reduces reporting errors and improves the timeliness of financial information. This study offers practical insights for MSMEs, demonstrating that the use of digital accounting systems not only enhances transparency and accountability but also contributes to informed decision-making, regulatory adherence, and overall business sustainability. (Zebua, 2025) In today's business environment, application-based cashier systems are increasingly adopted to improve transaction accuracy and streamline financial management processes. These systems enable real-time transaction recording and provide business owners with tools to monitor financial performance, control inventory, and analyze sales data. The adoption of application-based cashier systems has been shown to significantly improve operational efficiency, particularly for small and medium-sized enterprises (Lediwara, 2025).

Hypertext Markup Language (HTML) is a standard programming language used to structure, display, and organize content on web pages. HTML functions as the primary foundation in website development, as it defines the basic structure of elements to be presented, such as text, images, hyperlinks, tables, forms, and other multimedia components. Through the use of HTML, web developers are able to create well-structured and easily accessible web pages, making it a crucial component in the development of the user interface (Khozaimi, 2020). To enhance the visual appearance of web pages that have been built using HTML, **CSS (Cascading Style Sheets)** is utilized. CSS is a style sheet language that serves as one of the core technologies in website development. It functions to control the styling of elements within HTML files, thereby producing a more visually appealing and

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responsive interface (Kuparinen, 2023). JavaScript is used to add logic and interactivity to the website. Through the implementation of JavaScript, the website is not limited to displaying information statically, but is also able to respond to user actions, such as clicking buttons, entering data, and automatically displaying calculation results. This functionality allows the website to operate according to its intended purpose and provides users with a more dynamic and interactive experience (Wirfs-Brock, 2020).

METHOD

The data collection methods employed in this study involve both qualitative and quantitative approaches. Qualitative data were collected through the distribution of questionnaires to several micro, small, and medium enterprises (MSMEs) in the North Aceh region that continue to utilize manual transaction recording systems. The research subjects consist of MSME business owners, who act as both respondents and participants during the initial testing phase of the system. In addition to questionnaires, direct observations were conducted to examine daily transaction processes and were subsequently analysed to identify the primary challenges faced by MSMEs in managing financial records and sales activities. Quantitative data were obtained from system implementation trials and were analysed using a before-and-after comparison method following the adoption of the cashier website. This analysis focused on several key performance indicators, including reductions in transaction recording time, improvements in the accuracy of financial reports, and levels of user satisfaction with the system. The combination of these data collection methods provides a comprehensive evaluation of the effectiveness and practicality of the developed cashier website in supporting MSME operations.

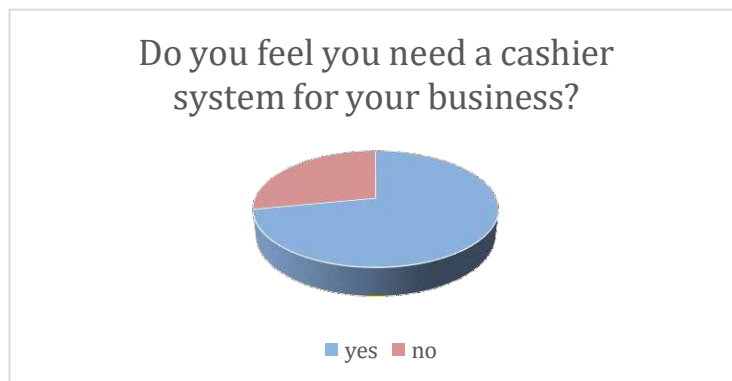


Diagram 1: Pre-Research Questionnaire Results.

It has been demonstrated that MSMEs in North Aceh require a transaction and financial recording system that is easy to use and effective. Through this methodology, the study is expected to produce a web-based cashier system that aligns with the needs of MSMEs and is proven to enhance efficiency and competitiveness, thereby contributing to the strengthening of the village-level economy in North Aceh. In the current digital era, websites have become an inseparable part of daily life for both individuals and organizations. In simple terms, a website is a collection of interconnected web pages on the internet that are accessed through a specific domain address. These pages can be managed by individuals, groups, or organizations and may contain various types of content, including text, images, videos, and audio.

The existence of websites provides convenience for users to access information quickly, efficiently, and without limitations of time or location. Therefore, websites have become highly strategic platforms for various purposes, including personal development, business activities, education, and entertainment (Yusuf, 2024). This concept is applied in the development of the “KasirAja!” website, which aims to assist MSMEs in North Aceh in conducting transactions and managing financial records that have traditionally been handled through manual methods. The process of designing the “KasirAja!” website, a flowchart or system design workflow was developed to systematically map the entire process. This flowchart serves as a step-by-step guideline in the website development process, starting from the initial planning stage through to final implementation. By utilizing a flowchart, the researchers gain a clear understanding of the workflow, task distribution, and interrelationships among system components. This approach is essential to ensure that each development stage proceeds as planned and that the final outcome meets the intended objectives.

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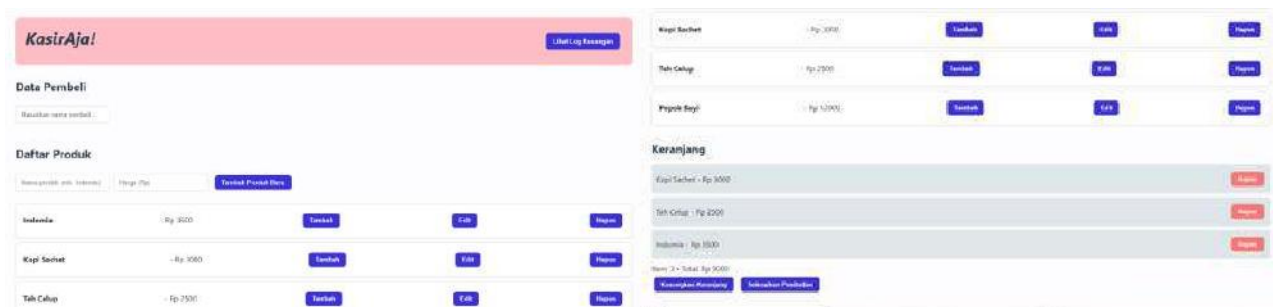


Image 1: “KasirAja!” website page.

In using the “KasirAja!” website, users are first required to enter customer data, and they may also add or edit the list of available products. Product prices can be adjusted according to operational needs. Subsequently, each time the “Add Product” button is selected, the order is automatically added to the cart, and the total price is calculated in real time. Once the transaction is completed, users simply click the “Complete Purchase” button, and all purchase data, including the total amount and detailed product information, are automatically stored in the financial log records. Through this workflow, the transaction recording process becomes faster, more practical, and more well-organized.

The image shows a screenshot of the 'Log Keuangan' (Financial Log) page. It features a table with columns for 'Tanggal' (Date), 'Nama Pembeli' (Customer Name), 'Total Belanja' (Total Spent), and 'Barang' (Goods). The table contains several rows of transaction data.

Tanggal	Nama Pembeli	Total Belanja	Barang
28/8/2025	-	Rp 9000	Kopi Sachet x1, Teh Celup x1, Indomie x1
28/8/2025	wi	Rp 6000	Indomie x1, Teh Celup x1
28/8/2025	-	Rp 6000	Kopi Sachet x2
28/8/2025	pti	Rp 6000	Teh Celup x1, Indomie x1
28/8/2025	icha	Rp 13000	Indomie x2, Kopi Sachet x2
28/8/2025	-	Rp 24000	Popok Bayi x2

Image 2: “KasirAja!” Financial Log page.

“KasirAja!” utilizes three main programming languages that serve as the foundation of its development process, namely HTML, CSS, and JavaScript. These three programming languages serve complementary functions and roles in creating the “KasirAja!” website, ensuring that it is not only functional but also visually appealing and user-friendly. HTML (HyperText Markup Language) is used to build the fundamental structure of the website, including layouts, headings, buttons, and other interface elements. CSS (Cascading Style Sheets) functions to enhance the visual appearance of the website through the customization of colors, font sizes, typography, and visual layouts, allowing users to experience a more pleasant interface when accessing “KasirAja!”. In addition, JavaScript plays a crucial role in managing the logic and interactivity of the website. Through JavaScript, various dynamic functions such as form validation, automated calculations, and real-time interactions can be implemented, making the website more responsive and interactive.

RESULTS AND DISCUSSION

This study was conducted over a period of three weeks and involved 15 micro, small, and medium enterprises (MSMEs) located in North Aceh Regency. Based on initial observations, it was found that the majority of MSME operators still relied on traditional methods of financial record-keeping, such as handwritten notes or simple manual logs. In some cases, business owners did not conduct any form of financial recording at all. These conditions indicate a low level of awareness and implementation of organized, systematic, and structured transaction recording practices among MSMEs in the region. To address this issue, the researchers carried out a selection process to identify MSMEs that met specific criteria, including a willingness to adopt technological solutions and a clear need for more practical and efficient transaction recording systems. This selection process ensured that the participants were suitable for the implementation and evaluation of the cashier website. Initial data were collected through pre-research questionnaires, which were designed to capture the actual conditions of respondents’ financial recording habits, challenges, and levels of understanding prior to using the cashier website. The results of these questionnaires provided a baseline for comparing changes in transaction recording practices

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after the system was implemented.

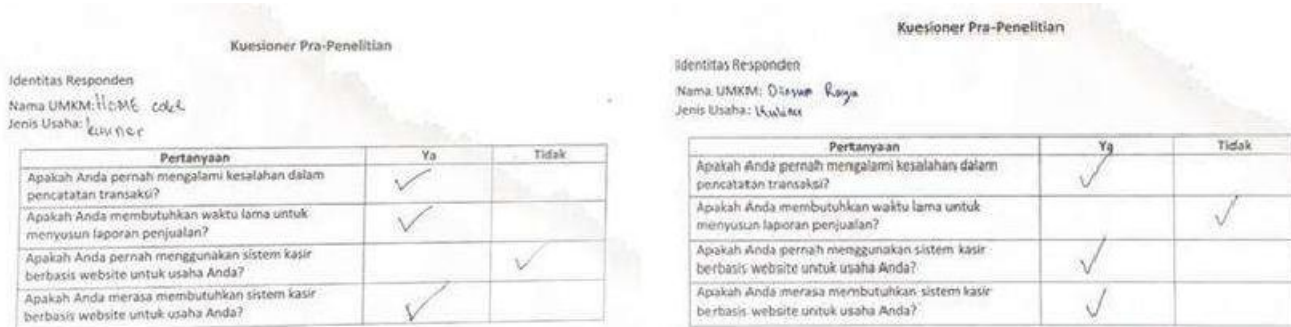


Image 3 : Pre-Research Questionnaire Results

The initial findings from these questionnaires served as an important basis for proceeding to the implementation stage of the study. During the research period, the respondents were asked to use the “KasirAja!” website as a tool for recording transactions. This trial was conducted over a three-week period with the objective of evaluating the extent to which the application could assist business owners in managing their daily transactions effectively.



Image 4 : MSMEs Cake tries the “KasirAja!” website as a tool for recording and calculating transactions.

After the trial period ended, the researchers redistributed post-research questionnaires to all respondents. These questionnaires were used to evaluate users’ experiences in utilizing the cashier website, including its ease of use, functionality, and overall effectiveness in supporting transaction recording activities.

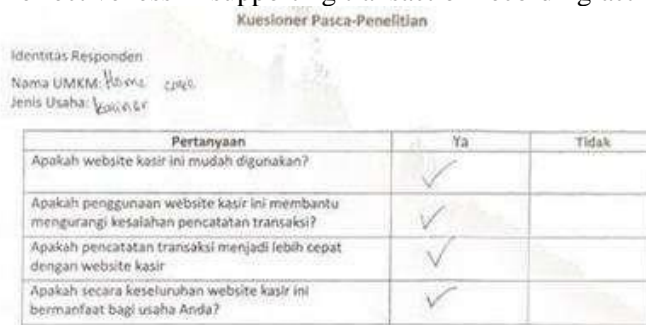


Image 5: Post-Use Questionnaire Results

The respondents assessed that the “KasirAja!” website provided numerous benefits, particularly in terms of transaction recording efficiency, reduction of calculation errors, and ease of reviewing financial reports. The results of the analysis indicate a significant difference between conditions before and after the implementation of the cashier website.

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Pre-research condition: The majority of MSMEs did not have a consistent and well-structured transaction recording system. Most business owners relied on manual methods, such as handwritten notes or simple logs, which were often incomplete, irregular, and prone to calculation errors. As a result, financial records were difficult to organize, review, and use as a basis for decision-making.

Post-research condition: After the implementation of the cashier website, most MSMEs became accustomed to using a digital system for recording transactions. This transition led to noticeable improvements in data accuracy, transaction recording speed, and overall organizational clarity. In addition, digital records enabled business owners to access transaction data more efficiently, review financial information in a more structured format, and manage daily operations more effectively. The digital transaction recording feature was also found to enhance customer trust, as transactions became more transparent and easier to verify. Based on the overall research process, several key findings can be summarized as follows:

- The “KasirAja!” cashier website effectively assists MSMEs in recording daily transactions in a more organized and systematic manner.
- The digitalization of transaction records reduces the risk of data loss and damage commonly associated with manual record-keeping methods.
- MSME operators reported that the application is helpful due to its simplicity, ease of use, and suitability for the operational needs of small businesses.



Diagram 2: Pre-Research Questionnaire Results

Thus, this study confirms that digitalization through a simple cashier website can serve as a practical and effective solution for improving the financial management practices of MSMEs in North Aceh. The implementation of digital transaction recording not only enhances efficiency and accuracy but also supports more organized and sustainable business operations.

CONCLUSION

This study demonstrates that the use of the “KasirAja!” website can improve the operational efficiency of MSMEs, particularly in transaction recording and the preparation of sales reports. The system successfully reduces recording time, lowers error rates, and enhances report accuracy as well as user satisfaction. Therefore, digitalization through a cashier website is proven to be a practical solution for MSMEs in overcoming the limitations of manual systems and in promoting business management that is more organized, efficient, and structured. To further enhance business efficiency, MSME operators are encouraged to gradually transition from manual record-keeping to digital systems such as cashier websites in order to minimize errors, accelerate transaction processes, and improve the accuracy of financial reports. To ensure optimal utilization of such systems, improvements in digital literacy and active participation in technical training or assistance programs are necessary. For future researchers, it is recommended to expand the scope of the study by involving a larger number of MSMEs across various sectors and regions.

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