EMPOWERING MSMEs THROUGH DIGITAL FINANCIAL INCLUSION: AN EXCEL VBA-BASED CASH BOOK SOLUTION

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ABSTRACT

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in Indonesia's economy. However, manual and unstructured financial record-keeping practices remain a major barrier to achieving financial transparency and data-driven decision-making. This study aims to develop a Digital Cash Book System based on Microsoft Excel VBA as a simple financial recording solution tailored to the characteristics of MSMEs. The research methods include system development, direct trials at Kios Bos Kecos, and evaluation through observation and interviews. The results indicate that the implementation of this system enhances recording efficiency, reduces manual errors, and provides real-time, easy-to-understand financial reports. The study's findings suggest that simple technology-based solutions, such as Excel VBA, can serve as an effective entry point for MSMEs to adopt financial digitalization, promote digital financial inclusion, and strengthen transparent and accountable financial governance.

Keywords: Financial Recording, Digital Financial Inclusion, MSMEs, Excel VBA

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) represent a crucial sector for the global economy, particularly in developing countries such as Indonesia. MSMEs contribute significantly to the Gross Domestic Product (GDP) and play a vital role in job creation, making them essential for fostering inclusive and sustainable economic growth. In Indonesia, MSMEs account for approximately 60.5% of the national GDP and employ nearly 97% of the national workforce, highlighting their position as one of the economy's fundamental pillars (Aprilia et al., 2025; Baginda et al., 2024). Digital financial transformation offers substantial opportunities for MSMEs, particularly those with limited access to digital infrastructure. While traditional cloud-based financial solutions often require considerable resources, Microsoft Excel enhanced with Visual Basic for Applications (VBA) provides a more affordable and flexible alternative. This approach facilitates better data automation and integration, thus fostering digital financial inclusion among MSMEs (Zheng & Ye, 2024).

Several previous studies have highlighted the importance of empowering MSMEs through digital financial inclusion, particularly by adopting Microsoft Excel VBA as an efficient and affordable financial recording solution. Research conducted by Kaligis et al. (2023) developed an Excel VBA-based accounting application designed to assist

MSMEs in preparing systematic financial reports. The findings indicate that utilizing spreadsheets equipped with automation features significantly improves both financial transparency and recording accuracy. Furthermore, Hermawan and Tyas (2023) emphasized that digital transformation in financial literacy and inclusion can positively impact MSMEs by expanding access to modern financial recording systems. Similarly, Sun and Zhang (2024) found that innovations in digital financial services play a crucial role in improving MSMEs' operational efficiency, particularly through the adoption of digital tools that enhance financial management practices. Kambi and Onyiego (2022) also examined the effect of financial digitalization on MSME growth in Kenya, revealing that the implementation of digital banking and electronic transactions contributed to improved operational efficiency and business expansion. In addition, research by Chen and Guo (2024) showed that advances in financial technology (fintech) have fostered innovation in MSME financial management, particularly through the adoption of more affordable digital systems. Collectively, these studies illustrate that implementing Excel VBA-based financial recording systems offers MSMEs a viable solution for improving financial record-keeping efficiency and accuracy, while also supporting broader digital financial inclusion efforts.

The primary objective of this study is to develop a Digital Cash Book Solution based on Excel VBA as an innovative approach to improving the quality of financial record-keeping among MSMEs. In the context of the digital economy, digital financial inclusion is increasingly becoming a key issue in both academic and policy discussions, playing a critical role in expanding MSMEs' access to more efficient, affordable, and technology-integrated financial services. By providing a simpler and more accessible financial recording system, this solution is expected to enhance transparency in MSME financial management, promote operational efficiency, and support data-driven business decision-making.

LITERATURE REVIEW

Digital Financial Inclusion

Digital financial inclusion refers to the provision of affordable and accessible financial services to all segments of society through the use of digital technology. This includes innovations such as electronic money, mobile banking, and digital payment platforms, which help reach individuals and small businesses that were previously excluded from formal financial systems. The primary goal of digital financial inclusion is to ensure that all individuals and businesses have access to a wide range of financial services tailored to their needs, including savings, credit, insurance, and payment systems, all delivered in a responsible and sustainable manner (Demirgüç-Kunt et al., 2018).

Financial Record-Keeping for MSMEs and Its Challenges

Effective financial record-keeping is a vital component for ensuring the sustainability and growth of Micro, Small, and Medium Enterprises (MSMEs). However, many MSMEs encounter numerous challenges in implementing proper financial recording practices. A study conducted by Gusneli et al. (2023) identified several key barriers faced by MSMEs in Indonesia, including limited resources, the complexity of International Financial Reporting Standards (IFRS), and difficulties in complying with regulatory requirements. In addition, research by Susanti et al. (2021) highlights that the limited knowledge of accounting and bookkeeping, coupled with the perception that accounting processes are complicated, acts as a deterrent for MSMEs to prepare proper financial reports. This lack of understanding often causes MSME owners to underestimate the importance of disciplined financial record-keeping, which ultimately affects business decision-making and their ability to access financial facilities. Therefore, collaborative efforts between the government, educational institutions, and financial institutions are crucial to providing ongoing training and outreach programs to enhance financial literacy among MSMEs.

Financial Digitalization for MSMEs

Financial digitalization for MSMEs refers to the utilization of information and communication technology (ICT) to manage and improve access to financial services for micro, small, and medium enterprises. Technology plays a crucial role in this process by providing digital solutions such as cloud-based accounting systems, financial record-keeping applications, financial technology (fintech) platforms, as well as automation tools such as Microsoft Excel VBA (Rifani et al., 2024).

Microsoft Excel VBA (Visual Basic for Applications)

Microsoft Excel VBA (Visual Basic for Applications) is a programming feature within Microsoft Excel that enables users to automate tasks and develop custom applications tailored to their specific needs. In the context of financial record digitalization, particularly for Micro, Small, and Medium Enterprises (MSMEs), Excel VBA offers an efficient and affordable solution (Ndari et al., 2024). By leveraging Excel VBA, MSMEs can design accounting systems customized to their business processes, including the preparation of financial statements, inventory management, and daily transaction recording. This implementation not only enhances accuracy and speed in financial management but also reduces manual errors commonly found in conventional record-keeping practices. Furthermore, Excel VBA enables better data integration and real-time presentation of financial information, thereby supporting more informed decision-making for MSME owners (Adriyanto et al., 2023).

METHODOLOGY

Research Design

This research employs a mixed-method research approach, combining qualitative and quantitative methods to explore the effectiveness of Microsoft Excel VBA as a digital financial recording solution for MSMEs. The study adopts an applied experimental research design, where an Excel VBA-based cash book system is developed, tested, and evaluated directly by MSME owners as the end users.

Data Collection

Data collection in this study was conducted using two main methods:

Primary Data

1. Direct observation of MSMEs that had not yet adopted digital financial recording systems.
2. Semi-structured interviews with MSME owners to understand their financial recording needs.
3. System trials, where MSMEs were asked to record their daily transactions using the developed Excel VBA-based application.
4. Questionnaires to assess user experience with the Excel VBA-based financial recording system, focusing on ease of use, efficiency, and recording accuracy.

Secondary Data

1. Literature reviews related to the digitalization of financial recording for MSMEs.
2. Statistical data from government reports or financial institutions regarding MSME adoption of financial technology.

System Development

The development of the Microsoft Excel VBA-based financial recording system was carried out in several stages:

1. Needs Analysis: Identifying the key features required by MSMEs in their financial recording system.

2. Design and Development: Creating the user interface, automating transaction inputs, and developing automated financial reports using Excel VBA.
3. System Testing: Testing the system in real-life financial recording scenarios conducted by MSMEs over a specified period.
4. Evaluation and Refinement: Evaluating system performance based on user feedback and refining the system to better meet user needs.

Data Analysis

The data collected was analyzed using the following methods:

1. Descriptive Analysis: Summarizing questionnaire and interview results related to users' experiences in using the Excel VBA-based financial recording system.
2. Comparative Analysis: Comparing the recording efficiency before and after implementing the developed system.
3. Thematic Analysis: Analyzing interview data to identify challenges and benefits of financial record digitalization using Excel VBA.

Research Location

This research was conducted at Kios Bos Kecos, a Micro, Small, and Medium Enterprise (MSME) engaged in garment tailoring services, located at Jl. H. Mansyur No.117, RT.09/RW.04, Bojongsoang, Bojongsoang District, Bandung Regency, West Java, Indonesia.

DISCUSSION

Analysis in progress

Kios Bos Kecos faces common challenges typically encountered by Micro, Small, and Medium Enterprises (MSMEs) in the service sector, particularly in daily transaction recording, cash flow management, and the preparation of systematic financial reports. According to Tahir & Riyanti (2021), many MSMEs in the service sector tend to neglect structured financial recording due to limited human resources with adequate accounting literacy, along with the perception that bookkeeping activities are only necessary for larger businesses. This is consistent with the findings of Susanti et al. (2021), which revealed that the limited understanding of financial record-keeping among MSME owners often leads them to rely on manual records or even personal memory for tracking transactions. In the case of Kios Bos Kecos, financial recording was previously carried out manually using a simple notebook, resulting in delayed reporting and the potential loss of transaction information.

Development of Excel VBA-Based Digital Cash Book Application

Creating the Main Dashboard

In the digital era, the implementation of interactive financial dashboards has become one of the key components in supporting data-driven financial management for MSMEs. According to Chatterjee & Kumar (2020), an effective financial dashboard can present complex financial information in a simplified visual format, making it easier for MSME owners to monitor their financial conditions in real-time. Another study by Muntean & Muntean (2021) also emphasized that financial dashboards provide convenience for business owners to track cash flows, income, expenses, and cash balances directly, without the need for manual calculations, thereby supporting faster and data-based decision-making. Furthermore, with automated data integration, the dashboard can consolidate essential information from various transactions and present it in the form of charts, tables, and key financial indicators that are easier to understand (Zhou et al., 2022).

Based on these concepts, the Main Dashboard developed in the Kios Bos Kecos Digital Cash Book System displays a real-time summary of financial information. At the top section of the dashboard, users can view the opening cash

balance, total income (debit balance), total expenses (credit balance), and the current cash balance, all of which are automatically updated as new transactions are recorded. In addition, to provide a more informative visual representation, a bar chart is also included, showing a comparison between total income and total expenses within a specified period. This visual element helps business owners easily monitor cash flow balances at a glance. The appearance of the Main Dashboard can be seen in Figure 1 below:
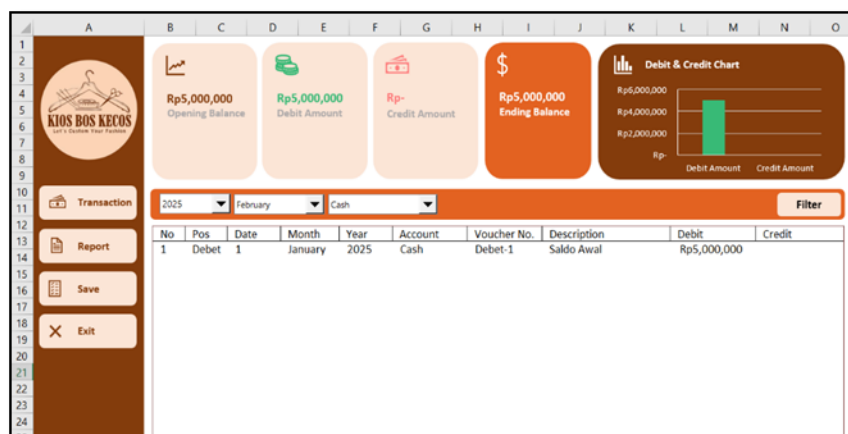
Figure 1. Main Dashboard of the Excel VBA-Based Digital Cash Book Application
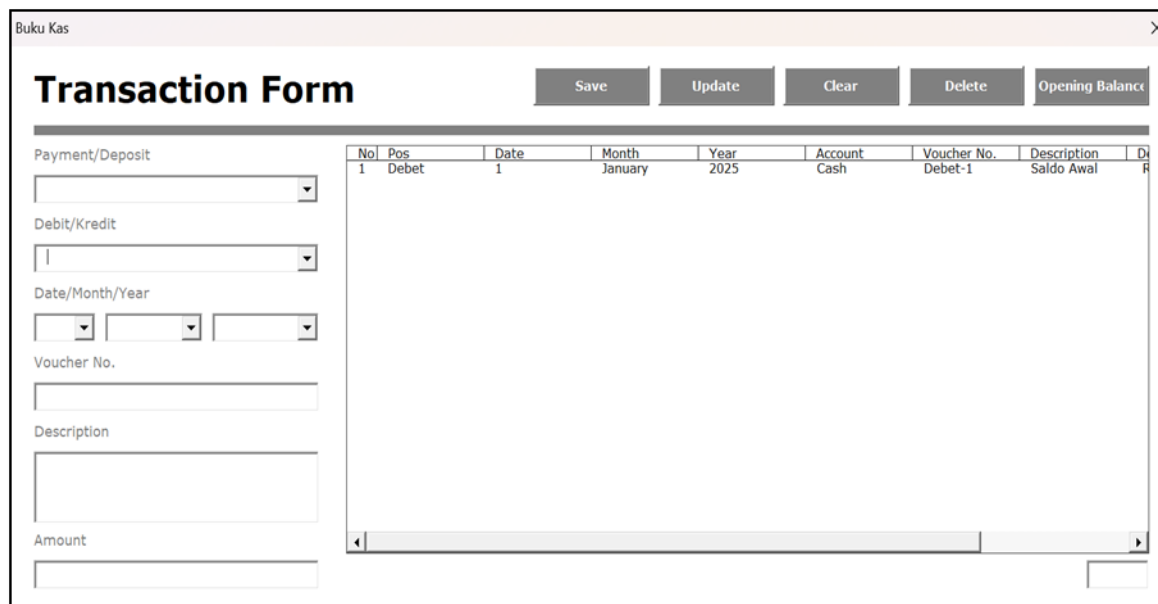
The dashboard also includes a filter feature that allows users to select data based on year, month, and account type, enabling users to focus on transactions relevant to specific periods or categories. At the bottom section, a complete transaction table displays a list of recorded transactions, including transaction numbers, debit/credit positions, dates, related accounts, document numbers, transaction descriptions, and debit and credit amounts. With a user-friendly interface that is fully integrated with the Microsoft Excel VBA-based financial recording system, this dashboard not only functions as a central financial information hub, but also serves as a simple analytical tool for Kios Bos Kecos owners to manage their daily finances more effectively and efficiently.

Digital Transaction Form Based on Excel VBA for MSME Kios Bos Kecos

The application of digital financial recording systems is increasingly essential for MSMEs to improve the efficiency and accuracy of their daily cash flow management. According to Rahman and Anwar (2022), digital recording systems equipped with intuitive transaction input forms significantly contribute to enhancing the financial literacy of micro and small business owners. A simple and user-friendly interface allows business owners without an accounting background to better understand the flow of financial recording processes. Additionally, Tosun & Barac (2020) explain that the use of digital forms as a medium for transaction recording speeds up the financial documentation process, reduces manual input errors, and improves the consistency of financial data. Research by Foster & Ward (2021) also emphasizes that features such as dropdown account selection menus, automatic date inputs, and structured transaction numbers are key components in ensuring the accuracy of recorded data while simultaneously strengthening internal controls within MSMEs.

Referring to these concepts, the Excel VBA-based Digital Cash Book System developed for Kios Bos Kecos is equipped with a Transaction Form designed with a simple and easy-to-understand interface. This form allows users to record both cash receipts and disbursements in a structured manner. Users only need to select the payment method, transaction type (debit/credit), and fill in the date, document number, transaction description, and amount.

Each inputted transaction is immediately displayed in the transaction history table on the right side of the screen, showing all recorded transactions. The appearance of the Transaction Form can be seen in Figure 2 below.

Figure 2: Transaction Form of the Excel VBA-Based Digital Cash Book Application

To facilitate data management, this transaction form is also equipped with navigation buttons, including Save to store new transactions, Update to modify existing transaction data, Clear to reset the input form, Delete to remove specific transactions, and a Set Initial Balance feature to set the opening cash balance for the period. This design follows the user-friendly interface principles recommended by Budiarto & Putra (2023), emphasizing that a user-friendly interface and simplified input process are crucial for MSMEs transitioning from manual to digital financial recording systems. With this efficient transaction form, Kios Bos Kecos can perform financial recording faster, more accurately, and in a well-documented manner, ultimately supporting more transparent and accountable cash management.

Excel VBA-Based Digital Cash Book Report for MSME Kios Bos Kecos

Accurate and well-structured financial reports play a critical role in supporting the sustainability of Micro, Small, and Medium Enterprises (MSMEs). According to Abdullahi and Baba (2020), systematically recording cash transactions helps MSMEs monitor their cash flow, identify sources of income, and control expenses regularly. Properly maintained financial reports are also a key requirement for MSMEs to access financing from formal financial institutions (Muchira & Karanja, 2021). Therefore, a cash book report that records all cash receipts and disbursements in detail is essential to support the financial transparency and accountability of MSMEs.

In the Excel VBA-based Digital Cash Book System implemented at Kios Bos Kecos, the Cash Book Report feature is designed to present a real-time summary of cash transactions in a simple yet informative format. The report displays complete transaction data, including the transaction date, account involved, document number, transaction description, debit and credit amounts, and the running cash balance. This information is presented in an easy-to-read table, complemented by a summary section showing the opening balance, total receipts, total disbursements, and the closing balance. With the filter feature, users can sort and view transactions by month and account type, allowing MSME owners to quickly access financial information relevant to their specific needs.

The print feature also allows the cash book report to serve as official documentation for business performance evaluation or credit applications. This aligns with the findings of Olusegun and Eniola (2022), who emphasized that adopting digital financial recording systems tailored to MSMEs can significantly improve financial literacy and operational transparency. With its user-friendly design, the Cash Book Report in the Kios Bos Kecos Digital Cash Book System is expected to encourage MSME owners to adopt more disciplined financial record-keeping practices, ensuring that financial management becomes more organized and ready to meet the demands of digital economic transformation. The appearance of the Digital Cash Book Report can be seen in Figure 3 below.
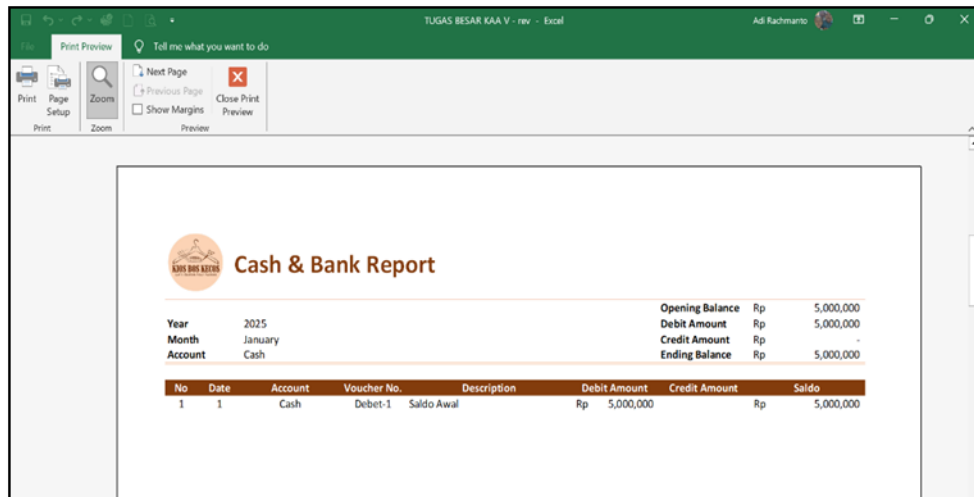
Figure 3. Display of the Cash Book Report in the Excel VBA-Based Digital Cash Book Application

Printable Excel VBA-Based Cash Book Report for MSME Kios Bos Kecos

Well-organized and properly documented financial reports are essential elements in enhancing the accountability and financial transparency of Micro, Small, and Medium Enterprises (MSMEs). According to Muchira and Karanja (2021), financial reports that can be printed and presented in a standardized format make it easier for MSMEs to meet both internal needs, such as financial performance evaluations, and external requirements, such as loan applications or tax reporting. Furthermore, Abdullahi and Baba (2020) highlighted that an integrated print feature within a digital financial recording system helps improve recording discipline and strengthens the internal control function of MSMEs, as printed reports serve as official transaction evidence.

In the Excel VBA-based Digital Cash Book System implemented at Kios Bos Kecos, users can directly print the Cash Book Report using the Print Button available in the report interface. When this button is clicked, the system automatically generates a Printable Cash Book Report in a professional format, including essential information such as the report period (year and month), account name, opening balance, total receipts, total disbursements, and the closing balance. Additionally, the report presents a detailed transaction table, including the transaction number, date, account, document number, transaction description, debit and credit amounts, and the running balance. The appearance of the Printable Cash Book Report can be seen in Figure 4 below.

Figure 4. Display of the Printable Cash Book Report in the Excel VBA-Based Digital Cash Book Application

With its structured and professional print format, this report not only facilitates business owners in conducting regular financial performance reviews, but also serves as a formal document for external purposes, such as loan applications or tax reporting. Muchira and Karanja (2021) emphasize that well-documented financial reports play a crucial role in helping MSMEs gain access to funding from formal financial institutions, as systematic financial statements provide a clearer and more reliable representation of a business's financial condition.

CONCLUSION AND RECOMMENDATION

Conclusion

The implementation of a digital financial recording system based on Microsoft Excel VBA at Kios Bos Kecos demonstrates that this solution is effective in improving the efficiency, accuracy, and transparency of MSMEs' daily financial records. With its simple and user-friendly interface, business owners can record all cash transactions in real-time, reducing the potential for manual recording errors and obtaining neatly structured and informative financial reports. This system also provides flexibility for MSMEs to manage their financial data without having to rely on expensive paid applications, thereby supporting digital financial inclusion for micro-enterprises that are still adapting to technology. Therefore, this Excel VBA-based solution can serve as a relevant alternative for MSMEs to strengthen financial governance while enhancing their readiness to face digital transformation in the small and medium enterprise sector.

Recommendation

Based on the findings of this study, several recommendations are proposed to benefit MSMEs, government agencies, and financial application developers, as follows:

1. MSME owners are encouraged to begin adopting simple digital financial recording systems, such as Excel VBA-based solutions, as an initial step to improve financial literacy and familiarize themselves with more structured data management practices.

2. The government and relevant institutions are expected to provide technical training on the use of simple digital applications for MSMEs, including introducing Excel VBA, to enable more MSMEs to adopt digital technology in their financial recording practices.
3. Developers of similar applications are recommended to continue enhancing the system by adding features that support integration with digital payment systems and automated tax reporting, so that MSMEs can be better prepared to comply with future financial regulations.

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