



Application of Cashier Applications in the Traditional Retail Digitalization Process: A Literature Study

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Abstract

Background. Digital transformation in the micro-retail sector has become an inescapable necessity, particularly in the face of technological advancements and shifts in consumer behavior.

Aims. This study aims to evaluate how the application of cashier applications as a form of digitalization affects the effectiveness of marketing in grocery stores in Kasihan District, Bantul, Yogyakarta.

Method. This study uses a systematic literature study approach to describe how cashier applications play a role in supporting the digital transformation of grocery stores, especially in marketing strategies. Data was analyzed from 12 relevant scientific journals, covering issues such as transaction efficiency, customer management, and data-driven decision-making.

Result. The study's results show that the use of cashier applications supports the effectiveness of promotions, fosters consumer loyalty, and facilitates digital stock and price management. The analysis was carried out thematically to identify the main patterns that appear in the literature.

Conclusion. This research makes theoretical and practical contributions to the development of micro, small, and medium-sized enterprises (MSMEs) in the context of digitalization in micro-retail.

Keywords: cashier application, MSME digitalization, marketing effectiveness, grocery store, systematic literature review



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INTRODUCTION

The development of digital technology has significantly impacted nearly all aspects of life, including the fields of business and commerce. One of the crucial forms of adjustment in the small and medium enterprises (SMEs) sector is the application of information technology in operational systems and customer service (OECD, 2018). In the face of the dominance of modern retail and online markets, traditional grocery stores are facing challenges in maintaining their existence. Grocery stores typically employ a conventional work system and

minimal digital record-keeping, making them vulnerable to transaction errors, stock inefficiencies, and slow responses to market changes (Kusuma, 2021a).

Digital transformation is a crucial strategic solution for micro-retailers, such as grocery stores, to enhance their competitiveness. One of the most commonly applied forms of transformation is the use of cashier applications or *Point of Sale* (POS) systems, which enable automatic sales recording, stock management, and transaction reporting. (Nugroho & Astuti, 2021). The implementation of cashier applications in grocery stores not only impacts operational efficiency but also provides opportunities to optimize marketing strategies through historical customer data, consumer segmentation, and transaction-based loyalty programs. (D. Rahmawati & Supriyadi, 2020).

Along with the increasing availability of affordable and easy-to-use technology. Some similar stores — such as vegetable stores — have started implementing cashier applications as part of their digitization process. However, this adoption rate is uneven, especially in semi-urban and rural areas. Many grocery stores do not fully understand the potential of cashier applications to enhance marketing effectiveness, beyond serving as a transaction tool. (Ridwan, 2024b).

In this context, it is essential to conduct an in-depth academic study of the implementation of cashier applications in grocery stores, with a focus on their impact on marketing strategies. This study aims to fill a gap in the limited literature regarding the relationship between operational digitalization and the marketing dimension of retail MSMEs (Marzuki et al., 2023). Using a systematic literature review approach, this study analyzes the various results of previous research to understand the role of cashier applications in influencing marketing decision-making and customer relationships.

This research also has practical relevance for MSME actors, technology service providers, and local governments in designing policies and programs to support the digitalization of traditional retail. Thus, the results of this study are expected to contribute both theoretically and practically to the development of digital-based marketing strategies in the micro-retail sector.

Based on the background that has been described, the formulation of the problem in this study is as follows:

1. What are the general trends in research related to the use of cashier applications in micro-retail?

2. How does the literature describe managerial and operational changes following the use of POS systems?
3. How has the past literature described the impact of cashier applications on grocery store marketing strategy and effectiveness?

LITERATURE REVIEW

Digitization of MSMEs and Cashier Applications

Digitalization in the MSME sector not only marks a shift from manual to automated work systems but also lays the foundation for more data-driven decision-making. According to (Nugroho & Astuti, 2021) The cashier application plays a crucial role in overcoming the limitations of manual recording, as it enables efficiency and accuracy in MSMEs' daily transactions. Features such as automatic sales recapitulation, transaction history, and real-time stock recording provide businesses with important information that was previously difficult to access quickly.

Additionally, cashier applications are beginning to integrate with digital financial systems and digital wallets, expanding payment options for consumers and thereby increasing customer satisfaction. This change also serves as a starting point for digital marketing, as sales data can be leveraged to target promotions, design bundling packages, and develop loyalty programs based on consumer buying behavior.

Study by (Kusuma 2021b) and (Marzuki et al., 2023) noted that the success of the implementation is greatly influenced by the level of digital literacy of business owners and training support from partners or government agencies. Therefore, the use of cashier applications in micro retail is not only related to the technical aspects of the device, but also concerns the readiness of human resources and the adaptation of digital behavior of business actors.

MSME Marketing and Marketing Mix 7P

The 7P (Product, Price, Place, Promotion, People, Process, Physical Evidence) model was developed by Kotler and Keller, 2016) It is a valuable reference for understanding marketing strategies in the service and product sectors. In the context of a traditional grocery store, not all elements of the 7P are fully implemented. Nonetheless, digital transformation through cashier applications is beginning to have an impact on several key elements in the mix.

First, in the Price aspect, the cashier application allows business actors to make price adjustments based on actual sales data and customer shopping trends. This changed the pricing method from intuition to data-driven (I. Rahmawati & Putra, 2020). Second, in the aspect of promotion, various cashier applications now support the recording of discounts, loyalty points, and digital coupons, making it easier for business owners to design promotional programs.

Third, from a process aspect, the use of the cashier application enables the efficiency of transaction flows and the regularity of recording. Increased transaction speed plays a crucial role in enhancing customer satisfaction and reducing queues, particularly during peak hours. Additionally, the cashier system, which records all transaction data, supports the daily audit process and strategy evaluation.

Research by (Nugroho & Astuti, 2021) Demonstrates that the use of simple technology, such as point-of-sale (POS) systems, has a positive impact on marketing management at the micro level. However, some literature notes that the use of marketing features in the POS system remains limited due to a lack of strategic understanding among MSME actors. Therefore, an educational approach is needed that bridges the understanding between technological features and marketing practices.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was developed by (Davis, 1989) Became the primary theoretical framework for explaining the behavior of technology adoption. TAM emphasizes two main variables: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). In various studies, TAM is used to explain the decision-making process of MSME actors in adopting POS-based cashier technology, particularly from the perspective of perceived usability and ease of use.

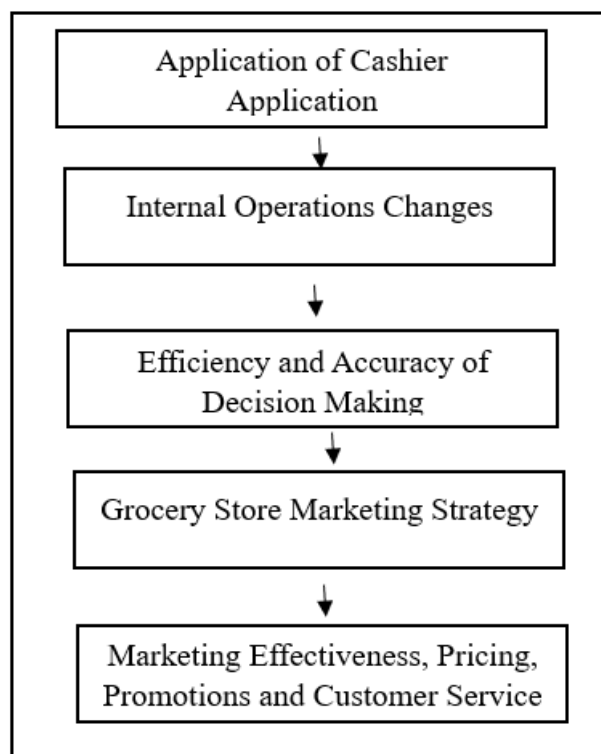
Perceived Usefulness (PU) refers to the extent to which users are confident that technology will improve employee performance. Study by (Ridwan, 2024b) and (Kusuma, 2021a) Shows that MSMEs that are aware of the benefits of cashier applications in improving efficiency and financial recording are more likely to maintain their use. Meanwhile, *Perceived Ease of Use* It has to do with the perception that cashier application technology does not require excessive effort to use.

Point-of-sale applications with simple interfaces, supported by training and technician assistance, tend to have higher acceptance rates. However, as shown in the study (Fernández-

Batanero & other authors, 2022), external factors such as digital literacy levels, user age, and social expectations also affect these two perceptions.

Studies show that resistance to technological change is often a significant obstacle, along with infrastructure constraints. The use of the TAM framework in various studies also enables the exploration of the psychological and behavioral factors that influence micro-retailers' decisions to accept cashier applications as a marketing and management tool.

CONCEPTUAL FRAMEWORK



The conceptual framework in this study is designed to describe the relationship between the important elements that are the primary concern of this study, as well as serve as a guide in analyzing and synthesizing the findings of various previous studies. This framework is not only descriptive but also analytical, as it is designed based on the results of a synthesis from various relevant literature sources, both theoretical and empirical. (Miles et al., 2014).

In this study, a conceptual framework was developed to explain how the incorporation of cashier applications, as a form of digital technology adoption, contributes to changes in work processes and marketing decision-making in grocery stores. This model helps map the transition flow from manual to digital systems, as well as explain the linkage between

operational digitalization and the effectiveness of marketing strategies based on findings in the relevant literature.

According to Creswell (2014), a sound conceptual framework must demonstrate a logical flow of thought and the relationship between the concept and the study's focus. Therefore, the framework in this study is based on a synthesis of various literature findings that describe the dynamics of digitalization in the micro-retail sector, rather than purely theoretical assumptions that are speculative.

The three main components formulated in this framework are:

1. The implementation of the cashier application (POS) as the starting point for digital transformation
2. Changes in the work system and store management
3. The effectiveness of the grocery store's marketing strategy as a result of the digitalization adoption process.

This framework helps illustrate how simple technologies, such as point-of-sale apps, are associated with changes in business behavior on a micro-scale, as observed in grocery stores, based on findings in the literature. Additionally, this framework serves as a conceptual tool to systematically relate the results of theoretical synthesis to the objectives of academic studies.

Conceptually, the flow of thought in this study follows the logic that the implementation of cashier applications contributes to changes in the management of daily store operations, including recording sales, managing stock, and enhancing customer service. These changes then have implications for the marketing dimension, especially in the aspects of price management, promotional strategies, and service quality. In the context of the Technology Acceptance Model (TAM), the perception of usability and ease of use serves as a crucial link that influences the potential for successfully integrating cashier applications into micro-retail marketing strategies.

This framework serves not only as the basis for compiling conceptual thinking flows but also directs the process of synthesizing findings in the literature, as well as connecting the main theories with the dynamics of systematic digitization of MSMEs.

RESEARCH METHODS

This study employs the Systematic Literature Review (SLR) approach to investigate how the application of cashier applications as a form of digital transformation impacts

marketing effectiveness in grocery stores. SLR was chosen because it can provide a broad and in-depth understanding through the critical analysis of various relevant scientific literature.

1. Literature Sources and Criteria

The data sources used in this study were obtained from national and international scientific journal articles accessed through academic databases, including Google Scholar, Scopus, ScienceDirect, and SINTA. Inclusion criteria in the selection of literature include:

- a. Articles published in the period 2019–2024
- b. Raising issues related to cashier applications, MSME digitalization, and retail marketing
- c. Written in Indonesian or English
- d. Available in full-text format

The exclusion criteria include articles that are opinionated, not thematically relevant, or not subject to peer review.

2. Review and Analysis Techniques

The review process is carried out systematically through three stages:

- a. Initial search and filtering by keyword,
- b. Assessment of the quality and relevance of the content of the article, and
- c. Thematic analysis of the selected research results.

The analysis method employed is thematic analysis, which aims to group findings based on key themes, including operational efficiency, promotional strategies, customer loyalty, and technology integration in marketing.

3. Synthesis of Findings

From the results of screening and selection, 12 articles were obtained that met the criteria and were analyzed in depth. The author, year of publication, primary focus, and key findings are used to classify each article. A table of review results is presented to reinforce the clarity of the findings in this study.

Literature Review Results

The following is a systematic table of review results from 12 related journals:

Yes	Writer	Year	Article Title	Study Focus	Key Findings
1	Nugroho and Astuti	2021	Digital Transformation of MSMEs Through Cashier Application as a Management Tool	Operational efficiency	Cashier application increases the speed and accuracy of MSMEs' daily transactions.

2	I. Rahmawati and Putra	2020	Customer Loyalty in Digital-Based Traditional Retail	Customer retention	Purchase data is used for consumer re-promotion and segmentation
3	Kusuma	2021	Technology-Based Human Resources Management in MSMEs	HR efficiency	Digitalization improves work distribution and coordination between staff
4	Marzuki et al.	2023	Strengthening Digital Competence through Training in Vocational Education	Technological adaptation	Digital training is an important factor in the successful adoption of technology by MSMEs
5	Ridwan	2024	The Role of Digital Literacy in Increasing the Competitiveness of MSMEs	Digital literacy	Digital literacy strengthens marketing strategies and expands market reach.
6	Rusman	2022	Challenges of Technology and Human Resources Management in the Digital Era	Data management	Effective data management is crucial in supporting the decision-making process within the small business sector.
7	Al-Ahmadi and Al-Subhi	2023	Efficiency in the Use of Digital Technology in the World of Education	Automation and efficiency	Process automation improves work efficiency and reduces administrative burden.
8	Fernández-Batanero et al.	2022	Barriers to Information Technology Training in Teachers: An International Study	ICT Training	A lack of technology training is a significant obstacle to the adoption of digital systems.
9	Santos and Oliveira	2022	The Role of AI-Based Applications in Improving Technology Literacy	Accelerating digital literacy	Expert technician assistance accelerates business actors' adaptation to new technologies.
10	Caprara and Caprara	2022	Digital Ecosystem in Virtual Learning Environments	Digital infrastructure	Adequate ecosystem support and technological infrastructure are necessary for the digitalization process.
11	Alhashem and Alfaiakawi	2023	Innovation in Virtual Labs for Technology-Based Learning	Learning innovations	Technology helps visualize concepts and accelerate trainee understanding
12	Toyibah	2024	Strengthening Creativity Through STEAM and Technology Approaches in Elementary Education	Innovation and creativity	Technology encourages innovation and creativity even at the level of basic education and business.

DISCUSSION

Based on the results of a literature review, the implementation of the cashier application has been proven to make a positive contribution to the marketing effectiveness of grocery stores. The use of this system accelerates the transaction process, reduces recording errors, and facilitates more informed decision-making. Historical information from POS systems enables business owners to identify consumer spending patterns, develop targeted promotional strategies, and create behavior-based market segments. (Nugroho & Astuti, 2021).

Several studies indicate that the use of cashier applications also increases the awareness of business actors to the importance of customer data. The information recorded in the system

enables grocery stores to devise strategies, such as offering loyalty discounts, product package deals, and more targeted placement of goods. In line with the opinion (I. Rahmawati & Putra, 2020) that the use of POS cashier applications (*Point of Sale*) provides an analytical foundation that supports promotional activities and customer relationship management in a more structured manner.

In addition to its marketing aspect, the cashier application also plays a crucial role in supporting the managerial activities of grocery stores. This system enables business owners who previously relied solely on manual recording to access financial information quickly and accurately. This convenience affects stock management, pricing, and decisions regarding the purchase of goods from distributors. POS cashier applications indirectly shift business practices from intuition to more data-based (Ridwan, 2024a).

Although it has considerable potential, some literature notes that the use of cashier applications by MSME actors is still limited to basic transaction functions. Many grocery store owners have yet to explore the strategic features available, such as promotional integrations and customer analytics. Obstacles that are often reported include low digital literacy, resistance to new technologies, and a lack of assistance from cashier system service providers.

Research by (Kusuma, 2021b) This supports the previous argument that small business actors tend to be reluctant to make optimal use of technology if it is not accompanied by ongoing practical training. Factors such as age, education level, and traditional business habits also contribute to the slow adoption of the digital system.

On the other hand, businesses that are more adaptive to technology are showing significant progress in their marketing strategies. They began to use sales data as the basis for evaluation and designed a more targeted marketing approach to customer needs. Through the use of loyalty features and transaction-based special offers, these stores can create added value that was previously difficult to achieve manually.

Based on the results of a literature review, cashier applications have made significant contributions to digital transformation in the grocery store sector. Its role not only improves efficiency in day-to-day operations but also supports more targeted and data-driven marketing decision-making. For its implementation to be more optimal, it requires support from an adequate digital ecosystem, including intensive training, easy access to technology, and affirmative policies from the government that favor MSMEs.

CONCLUSION

Based on the research results conducted in Kasihan District, Bantul, it can be concluded that the implementation of the cashier application has a positive impact on the marketing effectiveness of grocery stores. The use of this application not only speeds up the transaction process and reduces recording errors, but also makes a significant contribution in making more targeted marketing decisions. The historical data generated from POS systems enable store owners to identify customer shopping patterns, develop targeted promotional strategies, and conduct behavior-based market segmentation (I. Rahmawati & Putra, 2020).

Several studies have also demonstrated improvements in price management, customer management, and overall operational efficiency following the implementation of cashier applications. This aligns with the opinion. (Nugroho & Astuti, 2021) This suggests that digital transformation through simple technologies, such as cashier applications, can enhance the competitiveness of MSMEs, particularly in the micro retail sector. However, the success of implementation is highly dependent on the level of digital literacy and the adaptability of business people. Research by (Kusuma, 2021b) It also emphasized the importance of continuous training and technical assistance to ensure optimal use of technology.

In the context of policy, several studies emphasize the crucial role of local governments and technology providers in driving the success of MSME digitalization. Continuous training, incentives for digital devices, and integration with electronic payment systems are considered strategic factors for accelerating the adoption of technology, especially in semi-urban and rural areas that are still lagging in infrastructure.

Suggestion

Follow-up studies are recommended to investigate other aspects of grocery store digitalization, including consumer responses to technology-based services, the utilization of transaction data for location-based marketing strategies, and the integration of cashier applications with local e-commerce platforms. In addition, a comparative study between stores that adopt cashier applications and those that still use conventional methods can provide a deeper understanding of the impact on overall business performance.

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