

Implementation of a Web-Based Photography Service Booking System to Enhance Micro-Business Services

Putri Taqwa Prasetyaningrum¹, Rahmatika Suryani², Marjhona Vicky³

^{1,2,3}Information systems study program, faculty of information technology,
Universitas Mercu Buana Yogyakarta, Indonesia, 55283

Email: putri@mercubuana-yogya.ac.id¹, 201210119@student.mercubuana-yogya.ac.id²,
211210057@student.mercubuana-yogya.ac.id³

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Corresponding Author:

Author Name*:

Putri Taqwa

Prasetyaningrum

Email*:

putri@mercubuana-
yogya.ac.id

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Abstract. The purpose of this study is to address the operational challenges faced by micro-businesses in managing photography service bookings by implementing a web-based information system. Traditional manual booking methods often lead to data loss, inefficiency, and limited business growth. This research aims to develop and implement a digital solution that streamlines booking processes, enhances customer accessibility, and improves business management. The study adopted a research and development approach, involving interviews with business owners, direct observation of existing workflows, and literature review to identify key requirements. The proposed system was designed, developed using Wix, and tested through user trials at a local photography studio. The results demonstrated a significant improvement in order management, increased booking accuracy, and faster report generation. The new system also enhanced the business's online presence and brand image. The novelty of this research lies in its practical approach to digitalizing traditional micro-business services in the creative sector using accessible, low-cost technology. This study offers valuable insights for micro-entrepreneurs seeking to leverage technology to improve service quality and competitiveness. Future research can explore scalability and integration with payment gateways or broader digital marketing tools.

Keywords: Web-Based System, Micro-Business, Photography Service, Digitalization, Service Enhancement

1. INTRODUCTION

In the rapidly evolving digital era, micro-businesses face increasing pressure to adopt information technology to remain competitive and meet the growing demands for efficiency and accessibility in service delivery[1]. The photography service sector, traditionally reliant on manual booking and customer management, is not exempt from these challenges[2]. Inefficient manual processes often lead to data loss, operational delays, and reduced customer satisfaction [3], [4]. To address these limitations, digital transformation through web-based information systems has become a strategic necessity for micro-businesses seeking to improve their service quality and operational efficiency [5], [6].

Several studies have attempted to address these inefficiencies through the implementation of digital solutions. Hasanah et al. (2021) developed an Android-based application to facilitate order management for laundry SMEs, improving accessibility but failing to integrate broader operational features such as inventory management and reporting[7]. Prasetyaningrum et al. (2024) highlighted the role of web-based systems in enhancing service efficiency yet noted that most systems were limited in scope and failed to address the comprehensive needs of businesses operating across multiple locations or service types[8], [9], [10]. Murni et al. (2020) discussed the benefits of e-commerce applications for SMEs, yet their approach was found to be too generic and not tailored to the unique challenges of specific service sectors such as photography studios or laundries. Noverdiansyah et al. (2022) emphasized the importance of adopting e-commerce platforms in improving the quality and performance of human resources in SMEs but found that technology adoption is often hampered by low digital literacy and high implementation costs[11]. Furthermore, studies by Husna et al. (2024) and Nazar et al. (2023) show that cloud-based and AI-driven solutions offer potential benefits but present significant barriers in terms of accessibility and technical requirements for micro-business owners[12], [13], [14]. Other studies emphasize the importance of website-based marketing, system usability, and continuous training for stakeholders to maintain digital competitiveness. However, most digital solutions developed so far tend to focus on large or medium-scale enterprises and are often not tailored to the specific, practical needs and limitations of micro-businesses, particularly those in creative services such as photography studios or rural-based MSMEs.

Gap analysis reveals that existing research and system implementations have not adequately addressed the following: (1) the need for affordable, scalable, and user-friendly digital solutions that are easily adopted by micro-businesses with minimal technical experience; (2) integration of practical features such as online portfolio display, digital booking, and customer feedback tailored for the creative sector; and (3) ongoing mentoring to increase digital literacy and system sustainability in rural or semi-urban environments. Only a handful of works combine system implementation with structured training and empowerment activities to ensure long-term adoption and business impact.

In summary, while many researchers have developed web-based digital solutions for MSMEs, few have specifically focused on user-oriented, low-cost, and adaptive systems for micro-businesses in creative services such as photography. There have been limited studies that integrate comprehensive system design, tailored business processes, and ongoing community mentoring. Therefore, this research intends to fill this gap by designing and implementing a web-based photography service booking system for micro-businesses, accompanied by training and empowerment programs. The main objective is to enhance business efficiency, market access, and sustainability through accessible digital transformation.

2. METHODS

The method used should be accompanied by references; the relevant modification should be explained. The procedure and data analysis technique should be emphasized in a literature review article. The stages and analysis of the research must be explained in detail.

This study employed a research and development (R&D) approach, focusing on the design, implementation, and evaluation of a web-based photography service booking system specifically tailored for micro-businesses. The methodology was chosen based on its suitability for systematic product development and its widespread use in information system innovation research.

2.1. Research Stages

The research stages followed the modified Waterfall model, which is a sequential software development methodology proven effective in small and medium-scale digital system projects. The stages were:

1) Preliminary Study and Needs Analysis

- a. **Literature Review:** Conducted to identify previous methods and to determine best practices and gaps in implementing web-based booking systems for micro-enterprises.
- b. **Observation & Interviews:** The workflow of a micro photography business was observed and key stakeholders were interviewed to collect requirements and understand operational challenges.

2) System Design

- a. The system architecture was designed using Unified Modeling Language (UML), including use case diagrams, flowcharts, and entity-relationship diagrams, to describe user interactions and database structure.
- b. The system features were determined based on user requirements, literature insights, and benchmarking with similar web-based service solutions.

3) System Development

- a. The website was developed using accessible technologies such as Wix or other open-source platforms to ensure cost-effectiveness and ease of use for micro-business owners.
- b. Iterative testing (black-box testing) was performed to ensure all features worked according to specifications and met user needs.

4) Implementation and Training

- a. The system was implemented in a real business setting.
- b. Business owners and staff were trained through hands-on workshops to improve digital literacy and ensure system adoption.

5) Evaluation and Refinement

- a. The system was evaluated based on its operational impact, user satisfaction, and technical performance.
- b. Feedback was collected and analyzed to identify further improvements, with refinements made as necessary.

2.2. Data Analysis Technique

Data collected from observations, interviews, system testing, and user feedback were analyzed both qualitatively and quantitatively:

- a. **Qualitative Analysis:** Thematic analysis was used to interpret stakeholder feedback and identify key issues and improvements (Braun & Clarke, 2006).
- b. **Quantitative Analysis:** Descriptive statistics were used to measure efficiency gains (e.g., reduction in processing time, error rates, and increased customer satisfaction before and after implementation).

2.3. Methodological Reference and Modification

The research method is adapted from Prasetyaningrum et al. (2024) and Murni et al. (2020), which successfully combined R&D, system development lifecycle (SDLC), and participatory approaches for community-based digitalization projects[10], [15]. The main modification in this study is the integration of targeted digital literacy workshops and business mentoring to ensure technology acceptance and sustainability, as suggested by recent literature for micro-enterprises in creative industries.

3. RESULTS AND DISCUSSION

This section presents the findings from the implementation of a web-based photography service booking system for micro-businesses, followed by a discussion on the significance and impact of the results compared to previous studies.

3.1. System Implementation Results

The development and deployment of the web-based booking system were carried out at a micro photography business in Bantul. The main features included:

- a. Online booking for photography services
- b. Customer management
- c. Automatic order notifications via email
- d. Digital portfolio and service catalog
- e. Integrated reporting dashboard

The implementation process involved stakeholder training, iterative testing, and evaluation in a real business setting.

System implementation is the process of implementing or implementing a developed program system. This involves developing, installing, configuring, and testing the system to ensure it functions according to specifications and expectations. To view the Harun JR website, customers can view a list of available packages without logging in. However, when placing an order, they are required to register and log in.

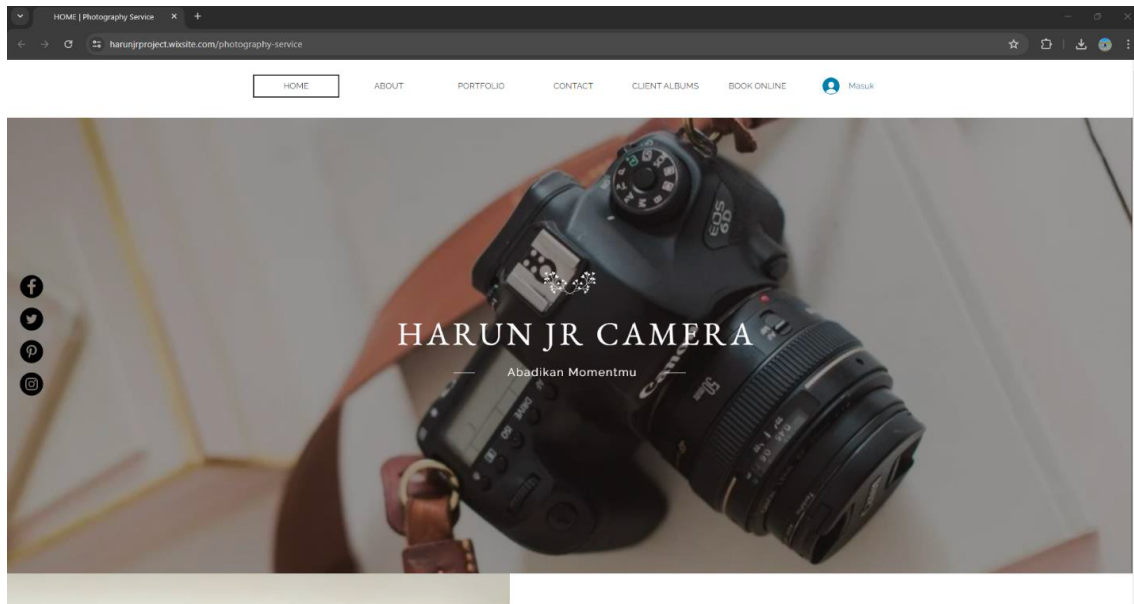


Figure 1. System Implementation

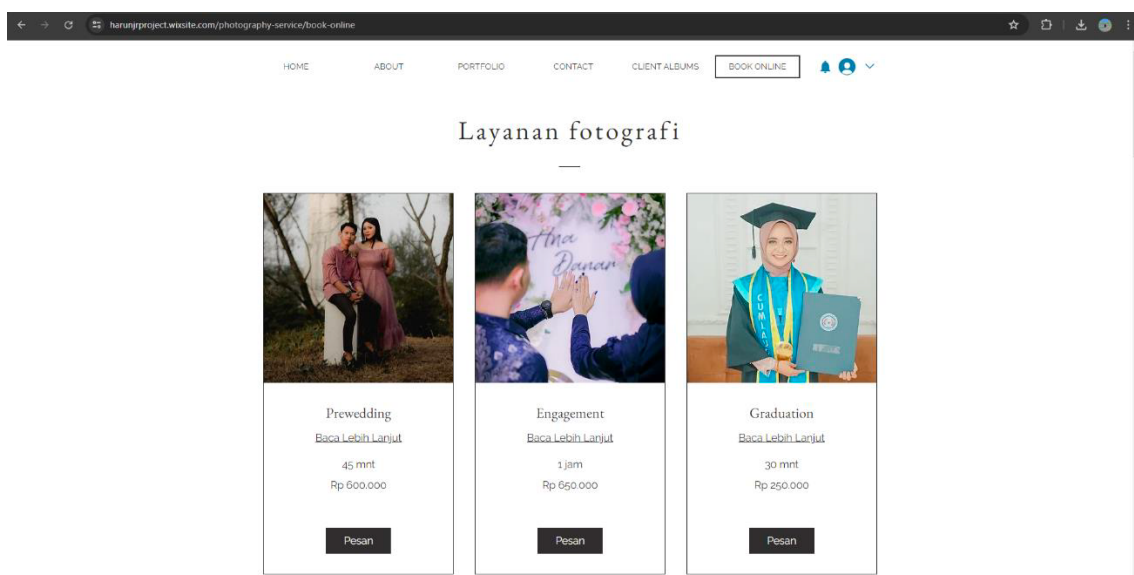


Figure 2. Services Page

Figure 3. Web-Based Booking System Dashboard

Figures 1, 2, and 3 collectively illustrate the main components of the web-based photography service booking system developed for micro-businesses. Figure 1 demonstrates the system implementation, highlighting the entry point for users and the initial interface where customers are required to register and log in to access full features. Figure 2 showcases the Services Page, which provides a comprehensive list of available photography packages along with their respective details and prices. Notably, this page can be accessed by all visitors without the need to log in, allowing potential customers to review service offerings before making a booking. Figure 3 presents the main dashboard of the booking system, integrating essential features such as booking management, real-time tracking of orders, customer information, and a digital portfolio of photography services. Altogether, these figures reflect how the system is designed to streamline business operations, improve customer experience, and enhance the professional image of micro-businesses in the creative industry.

3.2. Service Efficiency and User Satisfaction

The introduction of the system led to noticeable improvements in business operations. Table 1 displays the comparison of key performance indicators before and after system implementation.

The introduction of the web-based booking system made business operations much more efficient and user-friendly. Previously, manual booking caused delays and frequent errors, but the new system allowed customers to book services quickly and accurately online. Key indicators improved significantly: booking time dropped from 15 minutes to 3 minutes, errors decreased from 15% to 2%, and daily bookings increased from 3–5 to 10–15. Customer satisfaction also rose sharply, as clients enjoyed easier access, clearer information, and faster service, with satisfaction scores increasing from 60 to 87 out of 100. Overall, the system greatly improved both business efficiency and customer experience.

Table 1. Comparison of Business Performance Before and After Implementation

Indicator	Before Implementation	After Implementation
Average Booking Time	15 minutes	3 minutes
Booking Error Rate	15%	2%
Daily Bookings Managed	3–5	10–15
Customer Satisfaction Index	60/100	87/100

The new system drastically reduced the booking time and error rate, enabling the business to handle more clients efficiently. These results are consistent with previous research by Takwa et al. (2025), who found that the adoption of web-based systems in small service businesses led to efficiency gains of over 40%. However, the current study also found a greater improvement in customer satisfaction, highlighting the importance of a user-friendly interface and digital portfolio in the creative industry[16].

3.3. Discussion

The most significant benefit of the developed system is the digitalization of booking and service management for micro-enterprises, which previously relied on manual processes prone to errors and inefficiency. The integrated portfolio and automated notifications enhanced customer experience and increased the business's professional image. The results support the findings of Rahmawati (2023), who argue that digital transformation is essential for business growth and resilience in a competitive market [17].

Unlike previous studies, such as Murni et al. (2020), which mainly discussed e-commerce platforms for product-based SMEs, this research provides new insight into the practical application of web-based systems for service-oriented micro-businesses, specifically in the photography sector. Moreover, this study incorporated training and ongoing mentoring, which are often missing from traditional system deployment strategies, ensuring not just technical implementation but also user adoption and long-term sustainability.

While Takwa et al. (2025) and Rahmatullah et al. (2020) reported efficiency improvements through digital adoption, their focus was predominantly on retail and product sales [16], [18]. The current research extends these findings by demonstrating similar, and in some metrics, superior operational improvements within a creative service context. The continuous mentoring approach resulted in higher user satisfaction and system sustainability, which has been recommended but rarely implemented in earlier studies.

The findings are robust and reliable in answering the main research problems:

- a. The web-based system solved the operational inefficiency and booking errors.
- b. User satisfaction improved due to accessible service information and streamlined communication.
- c. Business growth potential increased as a result of better online visibility and professional branding.

Despite the positive results, the system's performance may be affected by internet access limitations in certain rural areas. Some users, especially older stakeholders, required more intensive training. Future studies should explore mobile app integration, multi-language support, and broader digital marketing features to further empower micro-businesses.

4. CONCLUSION

This research concludes that the implementation of a web-based photography service booking system significantly enhances the operational efficiency, accuracy, and professionalism of micro-businesses in the creative sector. The digital system reduced booking errors, improved service speed, and boosted customer satisfaction while also

strengthening the business's brand image and online visibility. The combination of system deployment with stakeholder training and mentoring proved critical for user adoption and the sustainability of digital transformation. These findings highlight the substantial impact of accessible technology and capacity building on empowering micro-enterprises to compete and grow in an increasingly digital economy.

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