

CHAPTER I INTRODUCTION

I.1 Background

In cities celebrated for their creative energy like Bandung, which was designated a UNESCO Creative City of Design in 2015 (Fleming, 2021), there is a flourishing ecosystem of independent businesses such as specialty cafes and private libraries. These establishments are more than just commercial entities; they are crucial "third spaces" for community building, informal education, and fostering local culture (Herlambang et al., 2019). A prime example of such a vital community asset is The Room 19 Library in Bandung. As a contributor to the city's literacy and community scene, it provides a unique and valuable space for learning and social interaction (Minati & Arfa, 2017; Suwarno, 2011). However, behind its daily operations lies a significant and urgent administrative challenge that threatens its long-term sustainability and impact. Currently, essential staff management functions are conducted by the owner using Google Sheets, while the staff attendance system relies on an informal process using a centralized WhatsApp group. These manual digital methods are fraught with inefficiencies, lack scalability, prone to human error, and pose significant data security risks (Harianto & Sumarno, 2023; Meyer et al., 2021). This situation is not merely an internal inconvenience; it directly impacts the library's ability to fulfill its role in supporting broader societal goals. The operational health of community-focused institutions like The Room 19 Library is intrinsically linked to the United Nations Sustainable Development Goals (SDGs), particularly SDG 4 (Quality Education) and SDG 11 (Sustainable Cities and Communities) (Jabeen et al., 2024;). To address these critical operational inefficiencies, this research proposes the development of a dedicated website featuring integrated modules for staff management and attendance. By transitioning from high-risk manual workarounds to a purpose-built digital solution, this project aims to significantly improve internal efficiency, reduce administrative workload, and establish a more professional and scalable operational foundation for The Room 19 Library. This will not only ensure its own sustainability but also enhance its capacity to contribute meaningfully to the cultural and educational landscape of Bandung.

The core of the problem at The Room 19 Library lies in its dependence on manual and consumer-grade digital tools for critical administrative functions. This reliance creates a precarious operational environment that is unscalable, inefficient, insecure, and, a finding supported by extensive research into spreadsheet-related risks. The current practice of using Google Sheets for managing all staff-related data, while accessible, is fundamentally flawed for professional human resource management. This method introduces several critical risks, starting with a high proneness to human error. Manual data entry is inherently susceptible to mistakes that can lead to incorrect payroll calculations, flawed performance data, and inaccurate staff records (Harianto & Sumarno, 2023). Furthermore, this method lacks scalability; a spreadsheet system that is manageable with a few staff members becomes cumbersome and inefficient as the organization grows, creating a direct barrier to sustainable growth. Research into spreadsheet software has confirmed that they are known to become sluggish or crash when operating on very large datasets, highlighting significant scalability problems (Guo et al., 2017). Finally, the practice poses significant security risks, as spreadsheets lack the robust features needed to protect sensitive staff information. These files are vulnerable to unauthorized access and data breaches, and it is difficult to maintain a clear audit trail to track who made changes to the data, which undermines accountability.

Similarly, the use of an informal messaging platform like WhatsApp for a formal process such as tracking staff attendance is both unprofessional and highly inefficient, presenting a host of administrative and legal risks. The most significant issue is the lack of verifiable evidence and a formal audit trail, which makes it difficult to accurately track punctuality and work hours and creates the potential for disputes. Important messages, such as attendance check-ins, can also be easily buried under a stream of unrelated conversations, leading to missed information and forcing management to manually sift through countless messages to log data which is a tedious and error-prone process (Elçi et al., 2022). Moreover, this practice raises significant data privacy and confidentiality concerns, as sensitive company communications are stored on staff members' personal devices and on external servers, outside of the company's control, which can lead to

potential breaches (Meyer et al., 2021). These combined inefficiencies create a constant administrative bottleneck, consuming the owner's valuable time and diverting focus from the library's core mission of serving its community.

To address these issues, a web application is designed and developed to replace the current inefficient and high-risk systems reliant on Google Sheets and WhatsApp with a centralized, scalable, and secure digital solution. The specific goals are to automate routine administrative tasks to reduce the workload on the owner, improve the accuracy and integrity of staff data, provide a secure and verifiable system for tracking staff attendance, enhance data security, and establish a scalable operational foundation that can support the library's future growth. Ultimately, by solving these critical operational issues, this research will strengthen The Room 19 Library's capacity to fulfill its cultural and educational mission, thereby reinforcing its contribution to achieving Sustainable Development Goals 4 and 11 in the city of Bandung.

I.2 Problem Formulation

Based on the background above, the problem statement for this research are as follows:

1. How can a centralized web-based system be designed to replace the manual processes for staff management and staff attendance to align with the specific needs of The Room 19 Library?
2. How can a centralized web-based system with the focus on staff management and staff attendance module be developed based on the created design, in order to produce a web application that is functional and scalable.
3. How can a centralized web-based system with the focus on staff management and staff attendance module be tested to validate the systems functionality in order to confirm that the developed web application effectively resolves the identified issue and meets the needs of users at The Room 19?

I.3 Research Objectives

This research aims to:

1. To design a centralized web-based system with the focus on staff management and staff attendance modules to replace the manual processes currently used at The Room 19 Library.
2. To develop a centralized web-based system into an integrated information system in accordance with the functional design that has been created.
3. To validate the systems functionality and effectiveness through testing, in order to confirm that the developed web application resolves the identified issues and meets the needs of users of The Room 19 Library

I.4 Research Limitation

This research focuses specifically on the development of web application for staff management and staff attendance modules at The Room 19 Library in Bandung. While a dashboard was implemented for both staff and owner users to support these modules.

I.5 Research Benefits

Benefits of this research:

1. For The Room 19 Library, this research will provide a practical and customized digital tool to solve immediate operational challenges, significantly reducing the owner's administrative workload and allowing for a greater focus on core activities such as community engagement and program development. It will also establish a more professional and scalable foundation for future growth.
2. For other Independent Libraries, this thesis can serve as a case study and a model for other independent libraries or small-scale enterprises in the creative sector that face similar administrative hurdles, demonstrating the feasibility and benefits of adopting targeted digital solutions.