

Development of an Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

Thodsaporn Kuaklang¹, Jaras Atiwithayaporn¹ & Niran Chullasap¹

¹ Faculty of Education and Liberral Art, Hatyai University, Songkhla, Thailand

Correspondence: Thodsaporn kuaklang, Faculty of Education and Liberral Art, Hatyai University, Songkhla, Thailand E-mail: Mail_new@khaopoon.ac.th

Received: June 21, 2025

Accepted: July 16, 2025

Online Published: September 21, 2025

doi:10.5539/hes.v15n4p235

URL: <https://doi.org/10.5539/hes.v15n4p235>

Abstract

This research aimed to develop and evaluate an Information System for Personnel Management (ISPM) tailored for schools under the Surat Thani Primary Educational Service Area Office. Employing a research and development (R&D) methodology, the study was conducted in three phases: (1) a needs analysis through in-depth interviews with 12 school administrators to identify problems and system requirements; (2) system development using the System Development Life Cycle (SDLC) model, followed by expert validation from seven IT professionals; and (3) implementation and effectiveness evaluation with 17 school personnel over a one-month trial. Results from Phase 1 indicated fragmented and inefficient practices, with most schools relying on manual or semi-digital tools. In Phase 2, the developed system was rated highly appropriate across dimensions such as data security ($M = 4.95$, $SD = 0.53$) and usability ($M = 4.83$, $SD = 0.38$). Phase 3 findings confirmed the system's effectiveness, with an overall satisfaction rating of $M = 4.82$ ($SD = 0.37$). The study contributes to the field by offering a full-cycle model of ISPM development grounded in actual school needs and validated through expert and end-user feedback. Limitations include the restricted trial scope and short duration, suggesting the need for future research on scalability and long-term use. The system provides a practical solution for enhancing personnel data management in Thai schools and potentially across broader educational contexts.

Keywords: ISPM, educational technology, educational management

1. Introduction

Personnel Management Information Systems (ISPMs) offer numerous benefits for educational institutions (Basel & Majeedy, 2023). These systems streamline a wide range of administrative functions, including certification tracking, performance evaluation, professional development history, leave management, and recruitment oversight (Dhanawade, 2024). By centralizing personnel data, ISPMs enhance the speed and accuracy of information retrieval while reducing redundancy and human error (Davarpanah & Mohamed, 2020). Moreover, they enable data-driven decision-making, allowing school administrators to allocate resources efficiently, monitor staff development, and ensure policy compliance (Chugh, 2013). In an era where educational institutions are held to higher standards of accountability and transparency, digitalizing personnel management is no longer optional—it is essential for improving institutional quality and operational efficiency (Rani & Katyayani, 2018).

To function effectively in educational contexts, an ISPM must incorporate several key components (Wu & Chen, 2024). First, the system should feature an intuitive interface accessible to users with varying levels of digital proficiency. Second, it must implement secure, role-based access to safeguard sensitive personnel information (Wako, 2003). Real-time data entry and update capabilities are also critical for maintaining accuracy and relevance (Tatnall et al., 2009). Additionally, automated data backup mechanisms should be in place to prevent information loss (Bannikov & Abzeldinova, 2021). Integration with other school systems—such as payroll, performance appraisal, or training databases—further enhances its functionality. Notably, in public education settings where resources and technical support are often limited, ISPMs lacking these core features tend to underperform and fail to deliver sustained benefits (Bahri et al., 2024).

In the Thai education context, particularly in rural and semi-urban areas, many schools still rely on manual or partially digitized personnel management systems, such as spreadsheets or physical records, despite the

recognized advantages of ISPMs. This fragmented approach often leads to inefficiencies, delays in access, and a heightened risk of data loss or inaccuracy. The absence of a unified system across schools within the same administrative region also complicates record-keeping and impedes strategic planning at both school and district levels. Challenges are further compounded by insufficient infrastructure, inadequate training in digital tools, and limited investment in educational IT development. As a result, schools struggle to meet contemporary administrative demands, underscoring the urgent need for a scalable, user-centered ISPM tailored to local needs and capacities.

The integration of information technologies in school administration is both timely and essential, especially given the increasing complexity of personnel management in the education sector (Shah, 2014). While the advantages of ISPMs are well-documented and the critical success factors are widely recognized, adoption remains inconsistent—particularly in under-resourced public schools. The continued reliance on outdated manual systems illustrates a disconnect between technological potential and practical application. This calls for deeper investigation into how ISPMs are designed, implemented, and evaluated in ways that directly address the realities of school-based personnel administration.

Previous studies have explored various aspects of ISPMs in organizational and educational contexts. Alimova (2024) highlighted the extensive application of information technologies across all human resource functions and noted that despite operational efficiencies, adoption is often hindered by cost concerns. In Indonesia, Hadianto and Purnomo (2021) found that the successful implementation of the SIMPEG system significantly improved administrative performance, particularly when aligned with IT integration and human resource capacity. Gasparovich et al. (2022) advocated for the use of digital business process modeling, such as IDEF0, to align personnel systems with institutional strategies. Similarly, Agunwa et al. (2019) argued that effective personnel management is foundational to school performance and staff productivity. Widodo et al. (2019) demonstrated that a structured, web-based personnel information system could support administrative automation and instructional goals in vocational education.

Although these studies provide valuable insights into the conceptual frameworks, benefits, and challenges of ISPMs, most focus on large-scale enterprises or specialized educational settings, such as vocational schools. Few have adopted a comprehensive research and development (R&D) approach that begins with needs assessment and continues through system design, deployment, and real-world evaluation. Furthermore, there is a notable lack of empirical research tailored to the Thai primary education context—research that addresses the specific limitations of existing systems and the contextual needs of local administrators. These gaps highlight the importance of developing ISPMs that are not only technically robust but also responsive to the lived realities of school personnel. Therefore, the purposes of this study were to examine the current conditions and needs related to personnel management systems in schools under the Surat Thani Primary Educational Service Area Office, to develop a tailored ISPM based on identified needs, and to implement and evaluate the effectiveness of the system in practice.

2. Methodology

2.1 Research Design

This study employed a research and development (R&D) design based on the System Development Life Cycle (SDLC) framework, which comprises seven stages: problem identification, problem analysis, system design, system development, system testing, system implementation, and system maintenance. The goal was to create and evaluate an information system for personnel management (ISPM) tailored to the needs of schools under the Surat Thani Primary Educational Service Area Office. The study was conducted in three sequential phases: needs analysis, system development, and implementation with effectiveness evaluation.

2.2 Phase 1: Needs Analysis for an Information System for Personnel Management

2.2.1 Participants

The participants in this phase were 12 school administrators under the Surat Thani Primary Educational Service Area Office. They were purposively selected based on their qualifications as senior-level administrators with a minimum of 10 years of professional experience. The sampling was a group of 9-23 informants is suitable for qualitative studies involving expert input.

2.2.2 Instrument

An in-depth interview protocol was used to explore the current conditions and the needs related to personnel management systems in schools. The interview form consisted of two parts: Part 1 collected general demographic information of the participants, while Part 2 contained open-ended questions focusing on existing

practices, encountered challenges, and system requirements for effective personnel management. Each item was assessed using the Index of Item-Objective Congruence (IOC), and every item in the final version was found to meet the accepted validity threshold ($IOC \geq 0.67$).

2.3 Phase 2: Development of the Information System for Personnel Management

2.3.1 Participants

This phase involved seven experts in information technology and systems development. All were purposively selected based on their expertise, holding at least a master's degree in a technology-related field and professional experience in system evaluation or educational IT projects.

2.3.2 Instruments

The draft Information System for Personnel Management (ISPM)

The draft Information System for Personnel Management (ISPM) was developed based on findings from Phase 1 and structured using the System Development Life Cycle (SDLC) model. The system was designed to support school-level personnel data management across five core functions: (1) addressing user and institutional needs (function requirements), (2) performing tasks related to personnel administration such as data entry, search, and update (functional test), (3) offering an intuitive interface to ensure ease of use for all education personnel (usability), (4) ensuring data protection through secure access and role-based permissions (security), and (5) providing a clear and comprehensive user manual to support system adoption (user manual). These components were used not only in the system design but also served as the basis for expert evaluations during development and implementation phases.

Appropriateness Evaluation Form

The ISPM appropriateness evaluation form was designed to assess the suitability of the developed system in supporting school-level personnel management. The form consisted of 22 items divided into five dimensions: (1) function requirement, (2) functional performance, (3) usability, (4) data security, and (5) user manual clarity. Each item was rated using a 5-point Likert scale, ranging from 1 (least appropriate) to 5 (most appropriate). The purpose of the instrument was to gather expert judgments on the technical and functional quality of the system. Content validity was established through a review by three experts, and each item was found to meet the acceptable threshold with an Index of Item-Objective Congruence (IOC) ($IOC \geq 0.67$).

2.4 Phase 3: Implementation and Evaluation of the Information System

2.4.1 Participants

The system was piloted at Ban Khao Phun School, Surat Thani Primary Educational Service Area Office 3. The participants included 17 individuals: one school administrator and 16 teachers and educational personnel. They were selected through purposive sampling to represent end users in an actual school setting.

2.4.2 Instrument

The System Effectiveness Evaluation Form

The System Effectiveness Evaluation Form was developed to assess the quality and functional performance of the implemented ISPM during the trial phase. The form was structured in two parts: Part 1 gathered general demographic information from the participants, while Part 2 consisted of 22 items designed to evaluate the system's effectiveness across five key dimensions: (1) function requirement, (2) functional performance, (3) usability, (4) data security, and (5) manual clarity. Each item was rated on a 5-point Likert scale, ranging from 1 (least effective) to 5 (most effective). The instrument aimed to collect user feedback on how well the system met practical expectations in real-school settings. Content validity was ensured through a review process conducted by three experts, and all items achieved an Index of Item-Objective Congruence (IOC) ($IOC \geq 0.67$).

2.5 Data Collection and Data Analysis

Data collection was carried out in alignment with each phase of the research. In Phase 1, in-depth interviews were conducted with 12 school administrators to gather qualitative insights on the current state and needs related to personnel management systems. In Phase 2, the draft ISPM and evaluation forms were distributed to seven IT experts to assess the system's appropriateness. In Phase 3, the finalized ISPM was implemented for a one-month trial at Ban Khao Phun School, where 17 users—including administrators and staff—completed the system effectiveness evaluation form. The quantitative data collected from Phases 2 and 3 were analyzed using descriptive statistics, including mean and standard deviation. Content validity was verified using the Index of Item-Objective Congruence (IOC), and instrument reliability was assessed through Cronbach's alpha. In addition,

content analysis was used to interpret qualitative feedback and provide contextual understanding of system usability.

3. Results

Phase 1: Needs Analysis Results

The in-depth interviews with 12 school administrators revealed two major themes: existing problems in personnel data management and the specific needs for system improvement.

Problems in Current Practices

Most schools continue to rely on manual or semi-digital methods, such as Microsoft Excel, Google Sheets, and paper-based documents, for managing personnel information. This results in data fragmentation, inconsistencies, and delays in information retrieval. Some schools use platforms like e-SAR, HRIS, and DMC; however, these systems often operate in isolation and lack interoperability. Therefore, it is difficult to consolidate and update information across platforms. Moreover, issues such as internet instability, limited access to real-time data, and the lack of technical personnel further hinder the efficiency of existing systems. In several cases, information related to leave records, training, or personnel status was either outdated or duplicated across multiple systems, leading to administrative confusion and errors.

Identified Needs for a New System

Participants expressed a strong demand for a centralized, school-level information system tailored specifically for personnel management. Key features identified as essential included: ease of data entry and editing, fast and accurate data retrieval, automatic data backup, secure access with role-based permissions, and a clean, intuitive user interface suitable for staff at all digital literacy levels. Additionally, the system should enable comprehensive data management—covering personal records, educational background, licensing, professional development, special duties, disciplinary records, and leave tracking. Administrators also emphasized the need for interoperability with external platforms, such as those used by the Office of the Basic Education Commission (OBEC), to ensure seamless data reporting and compliance.

Phase 2. The development of Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

The data gathered in phase 1 were analyzed and utilized to develop the ISPM system. The system was proved to have validity in terms of function requirements, function test, usability test, security, and manual (IOC = 0.67-1.0). The system was evaluated for appropriateness, and the result can be seen below.

Table 1. The appropriateness of Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

Aspects of evaluation	M	S.D	Interpretation
Function requirement	4.74	0.44	Very High
Functional Performance	4.74	0.44	Very High
Usability	4.83	0.38	Very High
Data Security	4.95	0.22	Very High
User Manual Clarity	4.71	0.46	Very High
Overall	4.82	0.37	Very High

The evaluation of the developed Information System for Personnel Management by seven IT experts indicated that the system was highly appropriate for use in school settings. Overall, the system received the highest level of quality with a mean score of 4.82 (M = 4.82, SD = 0.37). When analyzed by specific dimensions, the results showed that the highest-rated aspect was data security (M = 4.95, SD = 0.53), followed by functional performance (M = 4.86, SD = 0.36), usability (M = 4.83, SD = 0.38), function requirements (M = 4.74, SD = 0.44), and user manual appropriateness (M = 4.71, SD = 0.46). The system was adjusted following the comments from experts. The framework for Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office presents in figure 1.

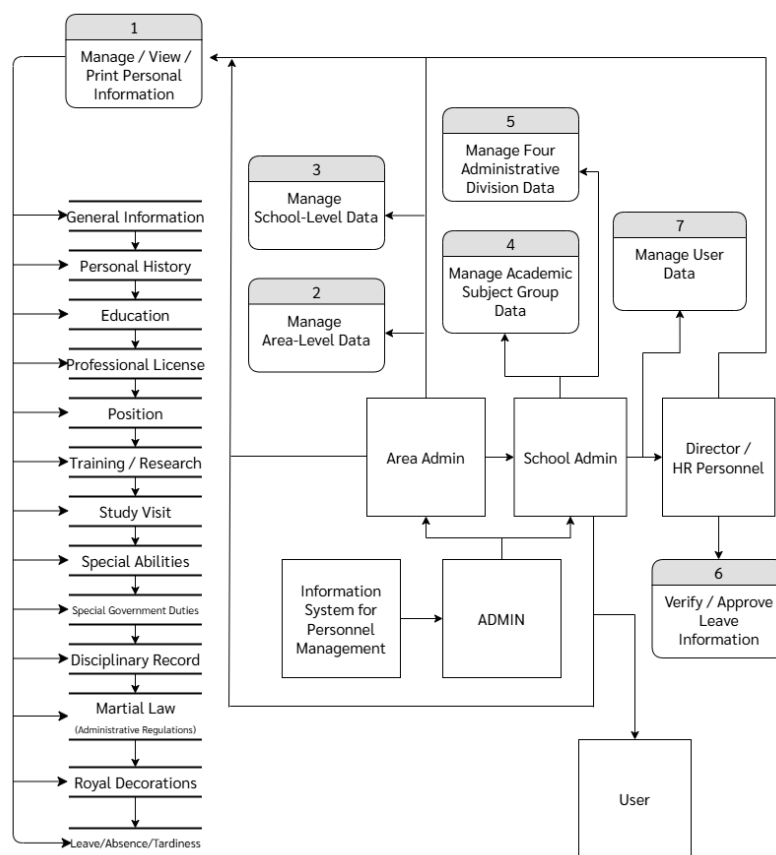


Figure 1. The framework for Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

The Information System for Personnel Management operates through a multi-role, multi-function platform designed to support data management at both the school and area levels. Users interact with the system primarily through the function to manage, view, and print personal information, which includes key data categories such as general information, education, professional licensing, training, disciplinary records, and leave history. Data management is structured across several administrative levels: area administrators manage area-level data, while school administrators are responsible for school-level data and academic subject group information. The system also supports the management of data related to the four administrative divisions and user accounts. Directors or HR personnel oversee the verification and approval of leave records. Access is governed by user roles, with general users interacting through a dedicated portal while administrators operate system-wide functions via centralized controls. The system ensures secure, role-based access and supports real-time data updates across all user levels to enhance efficiency and accountability in personnel management.

Phase 3. The implementation of the Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

Table 2. The satisfaction with Information System for Personnel Management in Schools under the Surat Thani Primary Educational Service Area Office

Aspects of evaluation	M	S.D	Interpretation
Function requirement	4.79	0.41	Very High
Functional Performance	4.84	0.37	Very High
Usability	4.81	0.39	Very High
Data Security	4.84	0.37	Very High
User Manual Clarity	4.75	0.44	Very High
Overall	4.81	0.40	Very High

After a one-month trial of the Information System for Personnel Management, feedback from 17 school personnel indicated a very high level of satisfaction across all evaluation dimensions. The highest-rated aspects were functional performance and data security ($M = 4.84$, $SD = 0.37$), reflecting the system's strong reliability and ability to safeguard sensitive information. Usability also received a high rating ($M = 4.81$, $SD = 0.39$), suggesting that users found the interface intuitive and easy to navigate. The function requirement dimension was similarly rated at a very high level ($M = 4.79$, $SD = 0.41$), indicating that the system met operational needs effectively. The clarity of the user manual was rated slightly lower but still within the very high range ($M = 4.75$, $SD = 0.44$), demonstrating that the documentation was generally supportive of system use. Overall, the system achieved a very high score of satisfaction ($M = 4.81$, $SD = 0.40$), confirming its practical effectiveness for school-based personnel management.

4. Discussions

The findings of this study emphasize the pivotal role of a well-designed Information System for Personnel Management (ISPM) in enhancing administrative efficiency and data management within the school context. The initial needs analysis phase uncovered several systemic issues in existing personnel management practices, including fragmented data storage, redundancy in information processing, and restricted access to real-time personnel records. These challenges reflect those identified in earlier studies, such as Alimova (2024) and Agunwa et al. (2019), both of which highlighted the inefficiencies and limitations of traditional HR methods in educational settings. The evidence reinforces the necessity for an integrated, secure, and context-specific system capable of supporting the evolving administrative demands in Thai schools.

The ISPM developed through this research was rigorously evaluated by both IT experts and end users, with results indicating consistently high ratings across all evaluated dimensions—functionality, usability, data security, and clarity of system documentation. These outcomes resonate with the conclusions of Hadiano and Purnomo (2021), who demonstrated that the effectiveness of personnel systems like SIMPEG depends heavily on sound system architecture and user-centered design. Moreover, the integration of automated data backup, role-based access controls, and streamlined workflows within the ISPM reflects the system-level recommendations made by Gasparovich et al. (2022), who emphasized digital modeling and process optimization as key components of modern HR systems in education.

Importantly, this study extends the literature by offering a full-cycle research and development (R&D) approach to ISPM creation—covering needs identification, system design, implementation, and effectiveness evaluation. While much of the existing research focuses narrowly on conceptual models or user satisfaction alone, this study bridges theory and practice by incorporating stakeholder feedback, expert review, and field-based deployment. The system's strong performance, particularly in terms of user satisfaction and data security, suggests that localized ISPMs—when developed in alignment with institutional needs—can provide scalable, sustainable solutions suitable for broader implementation across educational regions.

5. Conclusion

This study aimed to design and evaluate an Information System for Personnel Management (ISPM) specifically tailored to the needs of schools under the Surat Thani Primary Educational Service Area Office. The needs analysis identified fragmented, inefficient personnel management practices, highlighting the necessity for a centralized digital solution. The developed ISPM addressed these challenges and received high ratings from both experts and end-users in terms of functionality, usability, and data security. These results confirm the system's practical utility in strengthening administrative operations at the school level.

Despite these promising outcomes, the study is limited by its small sample size, the trial being confined to a single school, and the relatively short duration of system implementation. Future research should consider broader deployments across multiple educational sites and extended use over time to assess long-term impact. Further system enhancements—such as integration with national education databases, mobile accessibility, and advanced data analytics—could also increase functionality and support more dynamic, data-driven decision-making.

Acknowledgments

We sincerely appreciate the administrators, personnel officers, and IT experts from the Surat Thani Primary Educational Service Area Office for their valuable insights and cooperation throughout the research process. Special thanks are also extended to our academic colleagues who provided constructive feedback during the development of the manuscript. We would like to thank all school personnel who participated in the system implementation and provided thoughtful evaluations. Finally, we express our gratitude to those who offered

technical and editorial assistance in preparing this manuscript.

Authors' Contributions

Thodsaporn Kuaklang and Jaras Atiwithayaporn were responsible for the study design, data collection, and revision of the manuscript. Niran Chullasap contributed to data analysis and initial drafting of the manuscript. All authors read and approved the final manuscript. The authors contributed equally to this study and collaborated closely throughout all research phases.

Competing interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Canadian Center of Science and Education.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

Open access

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

References

- Agunwa, J. N., Owan, V. J., & Owan, M. V. (2019). *Personnel Management: Implications for the Effectiveness of the School System* (SSRN Scholarly Paper No. 3605550). Social Science Research Network. Retrieved from <https://papers.ssrn.com/abstract=3605550>
- Alimova, S. (2024). The role of information technology in the personnel management system. *Modern Science and Research*, 3(2), Article 2.
- Bahri, D. Z. A., Basuki, B., & Zamrudi, Z. (2024). Integrating Human Resource Information System into Educational Institutions: A Framework for Digital Culture Adaptation. *Al-Tanzim: Jurnal Manajemen Pendidikan Islam*, 8(4), Article 4. <https://doi.org/10.33650/al-tanzim.v8i4.9638>
- Bannikov, S. A., & Abzeldinova, K. T. (2021). *Digital Transformation of HR Management System*. 54-58. <https://doi.org/10.2991/aebmr.k.210222.011>
- Basel, O., & Majeedy, K. (2023). A Proposed Approach for Monitoring Information Systems Projects. *International Journal of Computers and Informatics*, 2(6). <https://doi.org/10.59992/IJCI.2023.v2n6p1>
- Chugh, R. (2013). Role of Human Resource Information Systems in an Educational Organization. *Journal of Advanced Management Science*, 2(2), 149-153. <https://doi.org/10.12720/joams.2.2.149-153>
- Davarpanah, A., & Mohamed, N. (2020). Human Resources Information Systems Implementation and Influences in Higher Education: Evidence From Malaysia. *International Journal of Asian Business and Information Management (IJABIM)*, 11(3), 65-84. <https://doi.org/10.4018/IJABIM.2020070105>
- Dhanawade, M. S. (2024). Selection and benefits of human resource information system (HRIS). *ShodhKosh: Journal of Visual and Performing Arts*, 5(1), Article 1. <https://doi.org/10.29121/shodhkosh.v5.i1.2024.1978>
- Gasparovich, E., Uskova, E., & Dongauzer, E. (2022). Application of the Modeling Method for Personnel

- Management Information System in the Digital Economy. *IV International Scientific and Practical Conference*, 1-5. <https://doi.org/10.1145/3487757.3490883>
- Hadianto, A., & Purnomo, A. (2021). The Influence of the Implementation of Personnel Management Information System, Utilization of Information Technology and Human Resource Competence on the Management of Personnel Administration. *IJESS International Journal of Education and Social Science*, 2(1), Article 1. <https://doi.org/10.56371/ijess.v2i1.77>
- Rani, C., & Katyayani, J. (2018). Benefits of Human Resource Information Systems for Modern Organizations. *International Journal of Engineering Research & Technology*, 3(18). <https://doi.org/10.17577/IJERTCONV3IS18034>
- Shah, M. (2014). Impact of Management Information Systems (MIS) on School Administration: What the Literature Says. *Procedia - Social and Behavioral Sciences*, 116, 2799-2804. <https://doi.org/10.1016/j.sbspro.2014.01.659>
- Tatnall, A., Visscher, A. J., Finegan, A., & O'Mahony, C. (2009). *Evolution of Information Technology in Educational Management*. Springer Science & Business Media.
- Wako, T. N. (2003). *Education Management Information Systems (EMIS): An Overview*. NESIS/UNESCO.
- Widodo, J., Dirgatama, C. H. A., & Wirawan, A. W. (2019). Website-Based Personnel Information System Design in Vocational High School. *Journal of Physics: Conference Series*, 1413(1), 012027. <https://doi.org/10.1088/1742-6596/1413/1/012027>
- Wu, Y., & Chen, D. (2024). Design and Implementation of Human Resource Optimal Scheduling System Based on B/S Architecture. *Journal of Human Resource and Sustainability Studies*, 12(1), Article 1. <https://doi.org/10.4236/jhrss.2024.121001>