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RehisPRO: Digitalizing Civil Registration Processes and Services for Enhanced Accuracy and Access

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ABSTRACT: The Local Civil Registry (LCR) of Madrid, Surigao del Sur relies on manual, paper-based processes that cause slow information retrieval and increased risks of data loss. This study developed RehisPRO, a web-based civil registry management system that digitizes birth, marriage, and death records to improve efficiency and data security. Using a Developmental-Descriptive design and the Agile Software Development Life Cycle, the system integrates document scanning, centralized digital archiving, intelligent search, and two-way authentication. Evaluation based on the ISO 25010 software quality framework yielded a "Very High" overall rating (4.87), confirming RehisPRO's effectiveness, security, and operational efficiency in civil registry management.

KEYWORDS: Civil Registry Management System; Web-Based Information System; Digital Archiving; Software Quality Evaluation; ISO 25010

I. INTRODUCTION

Civil registration forms the essential foundation of a nation's legal administrative system by documenting vital events such as births, marriages, and deaths that establish an individual's legal identity. In the Municipality of Madrid, Province of Surigao del Sur, the Local Civil Registry (LCR) continues to rely entirely on physical records, resulting in slow, labor-intensive, and time-consuming information retrieval when clients request official documents. To address these systemic challenges, this study developed RehisPRO, a specialized web-based civil registry system designed to digitalize physical records through direct document scanning processes. These scanned documents are stored as retrievable digital copies and supported by robust system functions that allow authorized users to print or download records, thereby improving overall accessibility, accuracy, and operational efficiency.

Previous studies emphasize that the digital transformation of public services is essential for improving administrative efficiency and transparency. Research shows that transitioning from paper-based workflows to integrated digital document management systems significantly reduces retrieval time while enhancing record reliability and security [1]. Additionally, the implementation of secure access mechanisms is critical in safeguarding sensitive civil data as

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government agencies adopt digital solutions. These findings support the development of RehisPRO and highlight the absolute necessity for a structured digital repository to overcome the historical limitations of manual record-keeping.

Despite earlier initiatives, the LCR of Madrid faces persistent operational gaps. Records remain physical, with no centralized digital repository or automated conversion tools. Manual sorting increases the risk of delays and reduces service reliability. To address this, RehisPRO introduces direct scanning, centralized web-based storage, advanced search functionality, and two-factor authentication. Ultimately, this study supports the LCR of Madrid in transitioning to a modern digital environment, ensuring reliable and timely access to civil registry records for the entire local community.

II. LITERATURE SURVEY

Civil registration systems are critical components of governance, forming the legal foundation for documenting vital events such as births and deaths, which are essential for establishing legal identity and access to basic services. Yet many local civil registries still rely on manual, paper-based workflows that result in slow retrieval, inconsistent records, and administrative inefficiencies. Research and policy frameworks increasingly emphasize that digitizing these systems can significantly enhance transparency, accessibility, operational efficiency, and data governance, particularly at the municipal level where frontline services directly affect citizens. In the context of Madrid's Local Civil Registry, this literature review explores global research, local implementations, national legislative frameworks, and technical guidelines to underscore the importance of digital transformation and to establish theoretical and practical support for the development of RehisPRO.

Digital transformation in local public services has been widely recognized as a pivotal strategy for improving administrative efficiency and transparency. Szedmák *et al.* examined the digital transformation of public services through a document management system across Hungarian municipalities and found that digitization significantly reduced administrative lead times, enhanced transparency, and improved service delivery outcomes, particularly by centralizing digital workflows and standardizing processes [1]. These findings illustrate how digital platforms can overcome the delays and inconsistencies caused by paper-based management, directly supporting the rationale for transitioning Madrid's civil registry into a web-based system.

Local level research within the Philippines highlights similar operational challenges and potential benefits from digital registry systems. A study on the digitalization of birth registry services in Patikul Municipality noted that the manual processes were slow, prone to errors, and difficult to manage, but that introducing digital systems increased transparency, accelerated processing times, and improved overall governance quality [2]. This aligns with common issues in civil registry operations—such as retrieval delays and data inaccuracies—and reinforces the need for digital solutions that improve service delivery at the municipal office level.

The legislative landscape in the Philippines also reflects strong policy support for modernizing civil registration systems. House Bill No. 5545 proposes the establishment of an integrated Philippine Civil Registry Database to standardize and digitalize vital records across government agencies, aiming to improve accessibility, accuracy, and interoperability of civil data [3]. Such national policy frameworks validate and encourage local digitization projects like RehisPRO, which must align with broader efforts to harmonize civil registry operations, improve governance, and ensure compliance with legal identity standards.

Research on digital governance in local public administration further highlights both the experience and challenges of digitizing government services. Tano's study on local IT implementation strategies indicates that while digital systems can significantly enhance operational performance and administrative responsiveness, successful adoption depends on addressing institutional capacity, user needs, and system usability [4]. This underscores that civil registry digitalization is not only a technical endeavor but also an organizational and human-centered transformation, a perspective directly relevant to the design and implementation of RehisPRO.

The *Practitioners' Guide for Digital Civil Registration and Vital Statistics Systems* provides practical guidelines for planning, designing, and implementing digital registry systems, emphasizing core principles such as compliance with legal and international standards, cybersecurity and data protection, interoperability, and sustainability [5]. The guide highlights that digitalization must go beyond mere data conversion and include holistic assessments of existing

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workflows, infrastructure needs, and user engagement strategies to ensure that digital solutions enhance efficiency without introducing new inefficiencies [turn0view0]. This practitioner perspective supports RehisPRO's focus on secure scanning, stored retrieval, and improved search functionalities within a web-based environment.

Table 1. Summary of Relevant Literatures

No.	Paper Title	Author Name	Key Points	Remarks
1	Digital Transformation of Public Services: The Case of the Document Management Application	Szedmak et al., 2025	Digital document management reduced processing time, improved transparency, and standardized workflows in local government units [1].	Supports the use of centralized digital systems in public administration.
2	Promoting Transparent Governance: Digitalization of Birth Registry at Patikul Municipal Civil Registrar	Hussam et al., 2025	Manual birth registry processes caused delays and inaccuracies, while digitalization improved access and service efficiency [2].	Justifies the need for digitized civil registry systems at the municipal level.
3	An Act Establishing the Philippine Civil Registry and Vital Statistics System	House of Representatives, 2024	The bill promotes digital integration of civil registry records to improve accuracy, accessibility, and data security [3].	Provides legal support for implementing a web-based civil registry system such as RehisPRO.
4	Digitalization in local governance	Tano, 2024	IT-driven governance improved efficiency but required usability and institutional readiness for successful adoption [4].	Emphasizes the importance of user-friendly and reliable system design.
5	Practitioners' Guide for Digital Civil Registration and Vital Statistics Systems	APAI-CRVS, 2024	The guide outlines best practices for secure, interoperable, and sustainable digital CRVS systems [5].	Serves as a technical reference for designing a secure and efficient civil registry platform.

In conclusion, the literature indicates that despite existing legal and policy support, digital civil registration at the municipal level remains limited by manual processes and technical constraints. Studies show that well-designed digital systems improve efficiency, transparency, and accessibility. RehisPRO addresses this gap by providing a secure and efficient web-based solution aligned with national policies and global best practices.

III. METHODOLOGY

Research Design

This study utilized a developmental-descriptive research design, integrating the practical creation of an information system with a formal evaluation of its performance. The RehisPRO web-system, was developed using the Agile Software Development Life Cycle (SDLC), which provided an iterative framework. This developmental phase systematically progressed from needs analysis and interface design to the implementation of core functionalities, specifically direct document scanning and detailed search features, all refined through sprint-based integration. Following system deployment, a descriptive phase was initiated to collect empirical data on the system's efficacy.

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Instrument

To measure the software quality of RehisPRO, this study adopted the ISO 25010 framework for software validation to ensure that the system aligned with internationally recognized standards. A five-point Likert scale questionnaire was administered to the selected respondents to gather quantitative feedback on key software quality attributes, particularly functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.. Each item in the questionnaire was rated on a five-point scale, with responses ranging from 1 = Not Acceptable to 4 = Very Highly Acceptable.

Data Collection and Participants

The study involved 30 respondents directly engaged in or knowledgeable about Local Civil Registry (LCR) processes and information systems. Participants included 10 IT practitioners, 10 Local Government Unit (LGU) staff of Madrid, and all LCR staff, who served as primary respondents due to their direct involvement in civil registry operations. This diverse group ensured that the RehisPRO evaluation captured both technical and operational perspectives.

Data Analysis

The data collected from surveys, interviews, and system evaluations were processed using statistical and analytical methods, with the following treatments applied:

1. Weighted Mean: Calculated to determine overall scores for software quality attributes based on the ISO/IEC 25010 model, including functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.
2. Scale Interpretation: Respondents' ratings were translated into a five-point descriptive scale (4.21–5.00 = Excellent, 3.41–4.20 = Very Good, 2.61–3.40 = Good, 1.81–2.60 = Fair, 1.00–1.80 = Poor).
3. Qualitative Data Analysis: Responses from interviews and open-ended survey questions were categorized and summarized to identify patterns, trends, and insights relevant to system usage and operational needs.
4. Triangulation: Data from different sources (surveys, interviews, and observations) were cross-checked to validate findings and ensure consistency

IV. RESULTS & DISCUSSION

System Features

RehisPRO successfully digitized civil registry management. Key modules include Two-Way Authentication with Role-Based Access for secure and controlled user operations, Document Uploading and Direct Scanning for seamless digital record capture, Record Creation and Detailed Record Retrieval for efficient management and lookup of civil registry entries, Statistical Reports Generation for data-driven insights, Record Printing and Exportation for easy dissemination of official documents, and Office Visitor Tracking to monitor and manage visitor activity within the registry office.

Performance Evaluation

The system received a "Very Highly Acceptable" (VHA) rating overall, with an average score of 4.87. Among the evaluated software quality attributes, Usability scored the highest at 4.94, while other attributes also received high ratings, reflecting the system's strong performance and user-friendliness

Conclusion

Table 2. Performance Evaluation System Tabulation

Table	Quality Characteristics	Mean	Verbal Interpretation
1	Functional Suitability	4.81	Very Highly Acceptable (VHA)
2	Perfrormance Efficiency	4.80	Very Highly Acceptable (VHA)
3	Compatability	4.84	Very Highly Acceptable (VHA)
4	Usability	4.94	Very Highly Acceptable (VHA)
5	Reliability	4.89	Very Highly Acceptable (VHA)
6	Security	4.90	Very Highly Acceptable (VHA)
7	Maintainability	4.90	Very Highly Acceptable (VHA)
8	Portability	4.89	Very Highly Acceptable (VHA)
	Over-All Mean	**4.87**	**Very Highly Acceptable (VHA)**

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V. CONCLUSION

RehisPRO successfully meets international software quality standards and demonstrates its effectiveness as a modern solution for digitizing and improving the operations of the Local Civil Registry of Madrid, Surigao del Sur. By integrating direct document scanning, centralized digital archiving, and secure two-way authentication, the system bridges the gap between traditional paper-based processes and the growing need for fast, accurate, and accessible civil registry services. The very high overall acceptability rating of 4.87, based on the ISO 25010 evaluation, confirms that RehisPRO performs reliably, protects sensitive data, and offers a user-friendly environment for staff handling civil documents. Through enhanced accuracy, faster retrieval, and improved data security, the system strengthens public service delivery and increases confidence in the management of government records. Although RehisPRO has already demonstrated excellent performance, further refinements such as improving system speed and expanding automated functions, will help sustain its long-term effectiveness and support the evolving needs of the civil registry.

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