

# ResiLinked: A Web-Based Job Portal for Informal Workers in the Municipality of Macabebe, Pampanga

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## Abstract

This study presents the design, development, and evaluation of “ResiLinked,” a web-based localized job portal developed to improve employment accessibility for informal workers within the Municipality of Macabebe, Pampanga. Informal workers frequently experience exclusion from mainstream digital employment platforms due to limited digital literacy, lack of formal educational credentials, and the complex requirements imposed by conventional job portals. To address these challenges, the researchers utilized a mixed-methods research design and employed the Rapid Application Development (RAD) methodology in developing the system. Data gathering was conducted through qualitative interviews, expert evaluations, and a quantitative survey involving one hundred (100) respondents from selected barangays. The system was evaluated using the ISO/IEC 25010 software quality standards and the Technology Acceptance Model (TAM) to assess technical quality and user acceptance. Findings revealed that ResiLinked achieved “Very High” evaluations in usability, performance efficiency, perceived usefulness, and perceived ease of use, demonstrating its effectiveness as a localized and skills-based employment platform for informal workers. The platform successfully improved job accessibility, strengthened barangay-level employment matching, and promoted digital inclusion through its Tagalog-friendly and user-centered interface. The study concludes that community-centered digital employment systems can help bridge the digital divide and support inclusive economic participation within local communities. Future enhancements may include the development of a native mobile application and the integration of digital payment systems to further strengthen support for the informal economy.

**Keywords:** Digital Inclusion, Informal Workers, ISO/IEC 25010, Localized Employment, Technology Acceptance Model, Web-Based Job Portal

## Introduction

### Background of the Study

Informal employment represents a significant portion of both the global and Philippine labor sectors. According to the International Labour Organization (ILO) [5], more than sixty percent (60%) of the global

workforce operates within the informal economy, functioning outside formal labor protection systems and regulated employment structures. In the Philippines, approximately 38.7% of non-agricultural employment is classified as informal, including occupations such as tricycle drivers, domestic helpers, construction assistants, street vendors, and other community-based service workers. Despite the continuous advancement of digital technologies and online employment services, many informal workers remain excluded from modern digital job opportunities due to limited digital literacy, lack of formal educational credentials, and the strict requirements imposed by mainstream employment platforms such as LinkedIn and JobStreet.

This digital exclusion contributes to unstable employment opportunities, income insecurity, and reduced access to sustainable livelihood sources within local communities. In barangays within the Municipality of Macabebe, many skilled workers continue to rely on word-of-mouth referrals, personal connections, and physical job searching due to the inaccessibility of conventional online job platforms. Existing systems are often designed primarily for formally educated and professionally certified applicants, making them difficult for informal workers to navigate and utilize effectively.

To address these challenges, the researchers developed “ResiLinked,” a hyper-localized and skills-based web job portal specifically intended for informal workers within barangay communities. The platform was designed to provide an accessible and inclusive digital employment environment through a Tagalog-friendly interface, simplified navigation, and user-centered interactions suitable for individuals with varying levels of digital literacy. By focusing on barangay-level employment matching, the platform enables employers to connect with workers based on practical skills and community trust rather than formal credentials alone.

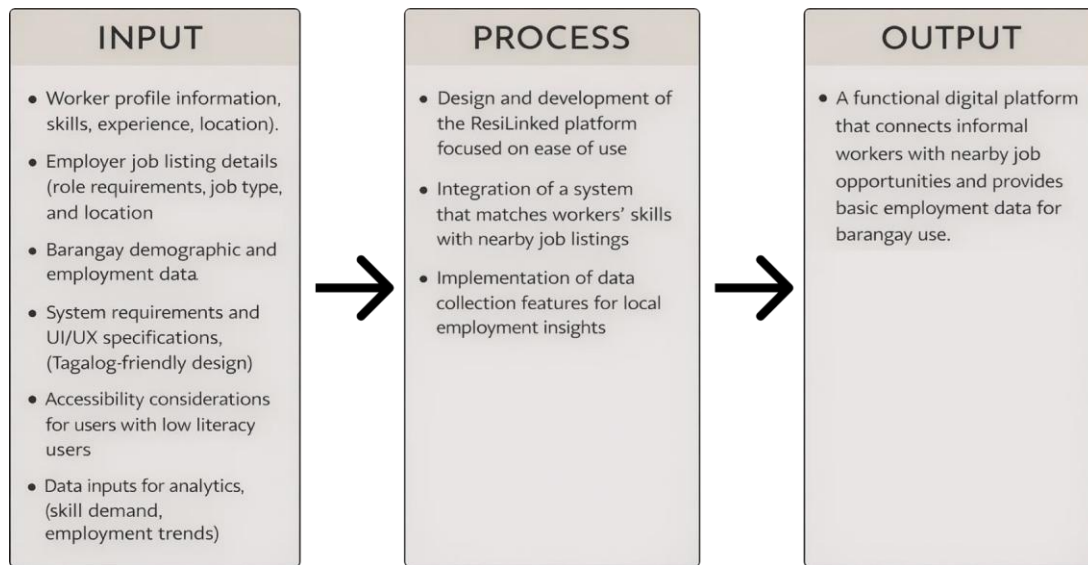
Furthermore, the study supports the growing need for community-centered digital solutions that promote inclusive economic participation and localized workforce development. Through accessible digital employment services, ResiLinked aims to help bridge the digital divide and improve employment accessibility for informal workers within the Municipality of Macabebe.

### **Objectives of the Study**

This study aims to design and develop “ResiLinked,” a localized web-based job portal intended to improve employment accessibility for informal workers within barangay communities in Macabebe. The proposed system is intended to improve job accessibility for informal workers through a digital employment platform, ensure that the platform is usable for individuals with low digital and reading literacy, measure the efficiency and responsiveness of the developed system, assess the level of trust and confidence informal workers have in using the platform, and evaluate the perceived impact of the platform on employment opportunities and livelihood confidence. Overall, the system is designed to strengthen community-based employment accessibility, improve digital inclusion, and support localized workforce development within the Municipality of Macabebe.

### **Conceptual Framework or Theoretical Framework**

The conceptual framework of this study uses the Input-Process-Output (IPO) model to illustrate the development and implementation of the ResiLinked platform. Inputs include worker profiles, employer job postings, barangay-based employment data, and the need for a localized and inclusive employment platform. The Process phase covers requirements analysis, system design, rapid prototyping, development, AI-assisted job matching, and iterative testing through the Rapid Application Development (RAD) methodology. The Output is the ResiLinked platform, providing a localized, accessible, and community-centered digital employment solution for informal workers within the Municipality of Macabebe.



**Figure 1. Conceptual Framework**

## Methods

### Research Design

This study employed a mixed-methods research design integrating qualitative and quantitative approaches to evaluate the development and effectiveness of the ResiLinked platform. The qualitative phase focused on identifying the employment-related challenges experienced by informal workers within barangay communities in Macabebe. The quantitative phase evaluated the technical quality, usability, and acceptance of the platform using ISO/IEC 25010 software quality standards and the Technology Acceptance Model (TAM).

### System Development Methodology

The ResiLinked platform was developed using the Rapid Application Development (RAD) methodology to support rapid prototyping, iterative development, and continuous stakeholder involvement. The methodology enabled the researchers to continuously refine the platform based on feedback from informal workers, employers, and Information Technology (IT) experts.

The RAD-based development progressed through the following phases:

**Requirements Planning.** The initial phase focused on identifying the challenges experienced by informal workers in finding employment opportunities within barangay communities in Macabebe. Interviews and consultations were conducted to gather user requirements and determine essential system features.

**User Design and Prototyping.** Initial prototypes of the ResiLinked platform were developed to visualize the system’s interface, workflows, and core functionalities. Features such as job posting, worker profiles, barangay-based verification, and Tagalog-friendly navigation were introduced during this phase.

**Rapid Construction and Development.** Core functionalities including the Admin Dashboard, Employee Dashboard, Employer Dashboard, AI Chatbot, and Payment System were implemented. Iterative improvements were continuously applied based on stakeholder evaluations and usability testing.

**Testing and Evaluation.** The completed system underwent technical evaluation using ISO/IEC 25010 standards and user acceptance testing through the Technology Acceptance Model (TAM). Feedback from respondents and IT experts was used to assess system effectiveness, usability, reliability, and acceptance.

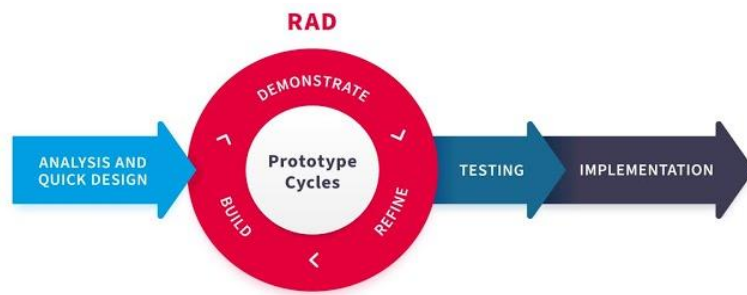


Figure 2. Rapid Development Application

**System Deployment and Setting**

The system was deployed and evaluated within selected barangays in the Municipality of Macabebe, Pampanga. The deployment environment served as a real-world setting where informal workers and local employers interacted with the platform to search for jobs, post employment opportunities, and participate in localized employment matching processes.

**Participants**

Participants included informal workers, residents, employers, and Information Technology (IT) professionals involved in the evaluation of the system. Purposive sampling was used to select informal workers who had direct experiences with local employment challenges. The quantitative evaluation involved one hundred (100) respondents from selected barangays and five (5) Information Technology (IT) professionals who served as expert evaluators.

**Data Collection**

Data collection for the study was conducted in three main phases to ensure comprehensive evaluation of the ResiLinked platform. The first phase involved a qualitative needs assessment, where informal workers from selected barangays in the Municipality of Macabebe were interviewed to identify common employment challenges, barriers in accessing job opportunities, and limitations of existing job-seeking methods. These insights were used as the basis for system design and feature development.

The second phase involved system testing and expert evaluation, where Information Technology (IT) professionals assessed the technical performance of the platform using the ISO/IEC 25010 software quality model. This phase focused on evaluating system functionality, usability, reliability, security, and overall system efficiency in a controlled environment prior to full deployment.

The third phase involved user acceptance testing, where informal workers and employers interacted with the deployed system and evaluated its usability and effectiveness using a structured questionnaire based on the Technology Acceptance Model (TAM). The questionnaire used a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree), measuring perceived usefulness, perceived ease of use, and behavioral intention to use.

All collected data were gathered through survey questionnaires, interview responses, and system usage feedback logs. These data sources were then consolidated and used as the basis for statistical analysis, including descriptive measures such as mean and standard deviation to determine system quality and user acceptance.

### **Ethical Considerations**

The researchers ensured that all participants voluntarily participated in the study and were informed regarding the purpose of the research before data collection. Confidentiality and privacy of participant information were maintained throughout the conduct of the study. Data gathered were used strictly for academic and research purposes only.

### **Data Analysis**

Qualitative data gathered from interviews were analyzed using thematic analysis to identify recurring employment challenges experienced by informal workers. Quantitative data were analyzed using descriptive statistics such as mean and standard deviation to evaluate system quality, usability, and user acceptance. Results from ISO/IEC 25010 and TAM evaluations were interpreted to determine the effectiveness and acceptability of the ResiLinked platform.

### **Results and Discussions**

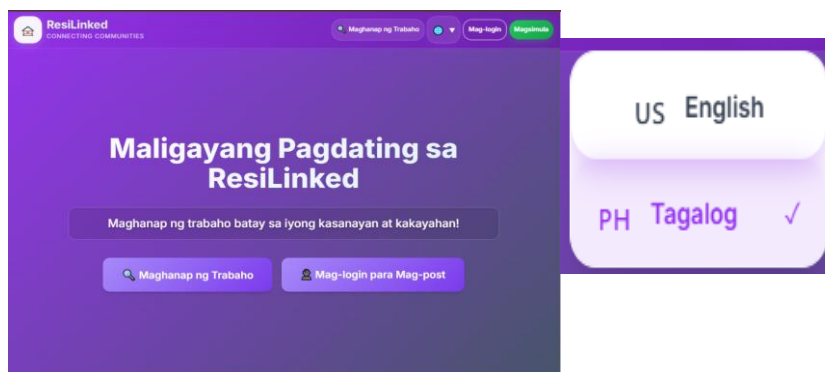
The ResiLinked platform features a localized and community-centered web architecture designed to support efficient employment matching for informal workers and employers within barangay communities in Macabebe. The platform integrates simplified navigation, AI-assisted job matching, localized

verification, and digital communication features to improve accessibility and user engagement. Core functionalities such as barangay-level verification, skill-based job matching, AI chatbot assistance, and digital employment management address the limitations commonly experienced in traditional and informal job-seeking methods. Overall, the system enhances employment accessibility, improves communication between workers and employers, strengthens trust through localized verification, and promotes digital inclusion among informal workers.

## System Architecture and Features

The ResiLinked platform offers a user-friendly, skill-based digital job marketplace for informal workers and employers, enabling efficient job matching, communication, and labor insights. Key components include dashboards, job postings, profile management, messaging, and analytics for barangay-level employment trends. Secure account management, notifications, and an AI-powered chatbot enhance usability and support, promoting transparency, accessibility, and engagement while fostering trust and community participation.

Figure 3. Landing Page, Login Page, and Language Feature



The Landing Page, as shown in Figure 3, serves as the main entry point of the ResiLinked platform, introducing users to the system and guiding them toward core actions such as finding jobs, posting opportunities, and accessing their dashboards. The interface was designed with simplicity and accessibility in mind to accommodate informal workers with varying levels of digital literacy. The Language Selection feature allows users to switch between English and Tagalog, ensuring a more inclusive and user-friendly experience for both workers and employers within the Municipality of Macabebe.

Figure 4. Chatbot Chat Page and User Profile

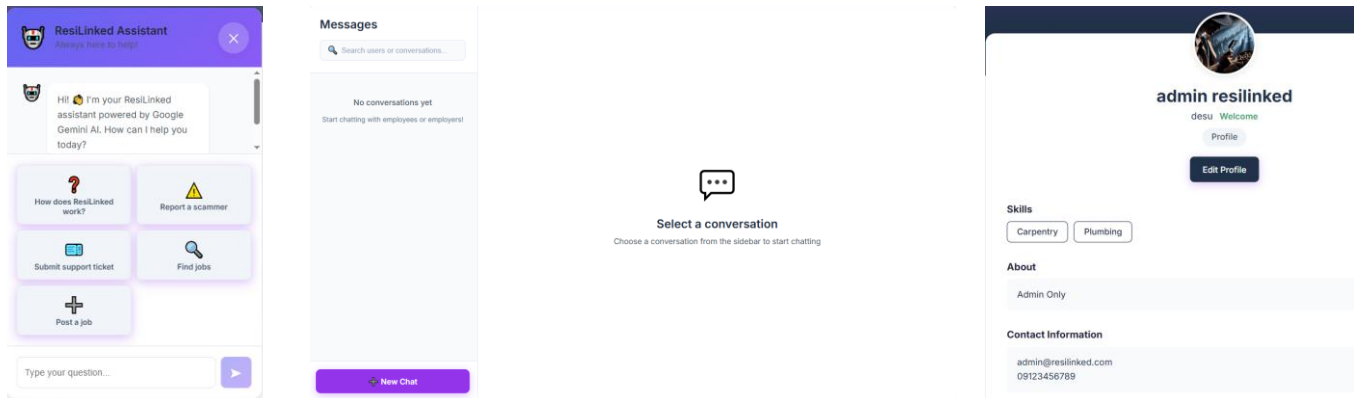
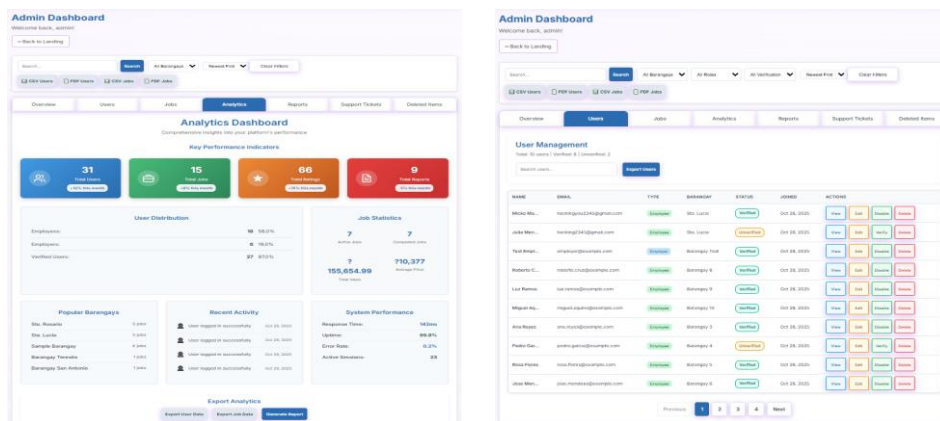


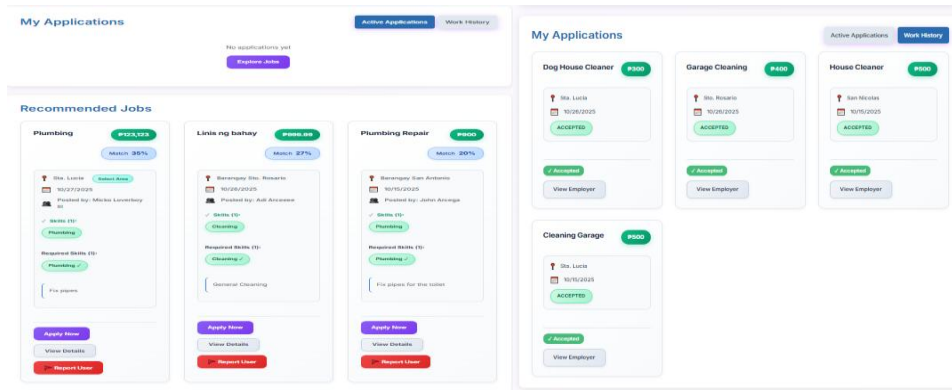
Figure 4 presents the Chatbot page, Chat page, and User Profile page of the ResiLinked platform. The Chatbot page integrates an AI-powered assistant utilizing Google Gemini and Dialogflow technologies to assist users in navigating the platform, answering inquiries, and providing guidance regarding job searching and platform usage. The Chat page enables direct communication between workers and employers, improving transparency and facilitating faster employment transactions. Meanwhile, the User Profile page functions as a personalized hub where users can manage professional details, display skills and experience, monitor applications, and access important account functions efficiently.

Figure 5. Admin Dashboard



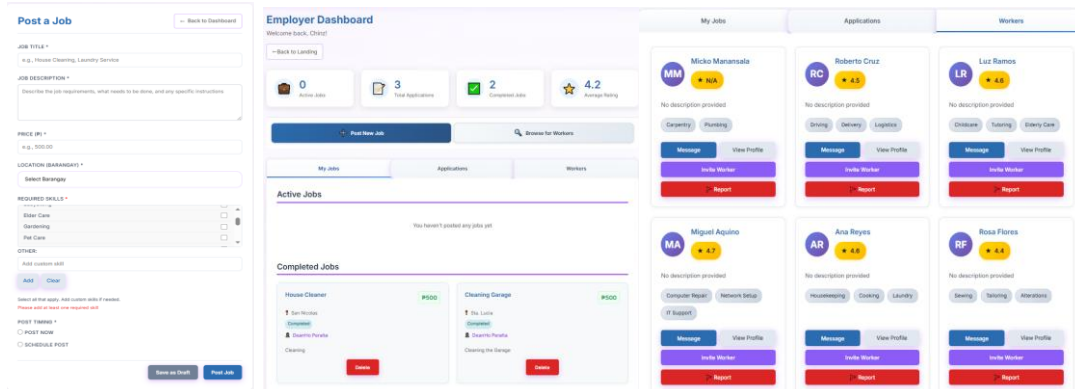
The Admin Dashboard, as shown in Figure 5, serves as the central control panel for administrators. It provides an overview of platform activities, including user management, job postings, ratings, reports, and overall platform performance. Through this dashboard, administrators can monitor system operations, manage reported content, oversee support concerns, and maintain the integrity and security of the platform. The dashboard also enables efficient moderation of users and employment postings to ensure safe and reliable transactions within the ResiLinked environment.

Figure 6. Employee Dashboard



The Employee Dashboard, as shown in Figure 6, provides informal workers with a personalized platform for managing job applications and employment activities. It displays key performance indicators, active applications, work history, and recommended jobs based on the worker’s skills and qualifications. The dashboard also offers quick access to important functions such as “Find Jobs,” profile management, and application tracking. Additionally, skill match percentages are displayed to help users identify employment opportunities that best align with their abilities and experiences, improving efficiency in the job-seeking process.

Figure 7. Employer Dashboard



The Employer Dashboard, as shown in Figure 7, centralizes recruitment and workforce management functions for employers using the platform. It provides employers with performance metrics, job management tools, applicant monitoring features, and streamlined hiring processes. The integrated “Post a Job” feature simplifies the creation and publication of job listings, enabling employers to efficiently recruit workers within their barangays. Furthermore, employers can review applicants, monitor hiring progress, and manage employment interactions directly through the dashboard, improving transparency and efficiency in localized hiring activities.

**System Quality Evaluation (ISO/IEC 25010)**

Information Technology (IT) professionals evaluated the technical quality of ResiLinked using the ISO/IEC 25010 standard to determine its suitability for real-world deployment within the Municipality of Macabebe.

Table 1 Overall Technical Evaluation of ResiLinked (ISO/IEC 25010)

Characteristics	Mean	SD	Interpretation
Functional Suitability	3.80	0.39	Very High
Performance Efficiency	3.47	0.61	Very High
Usability	3.56	0.68	Very High
Reliability	3.60	0.55	Very High
Security	3.68	0.53	Very High
Compatibility	3.52	0.60	Very High
Maintainability	3.40	0.56	Very High
Portability	3.40	0.56	Very High
<b>Final Mean / SD</b>	<b>3.59</b>	<b>0.55</b>	<b>Very High</b>

Table I shows that ResiLinked achieved a “Very High” rating across all ISO/IEC 25010 quality characteristics, with a final mean of 3.59. Functional suitability and security obtained the highest ratings, indicating that the system effectively supports its intended functions while ensuring strong data protection and secure role-based access. The results also reflect that the platform performs reliably and consistently under real-world conditions within the Municipality of Macabebe.

The relatively low standard deviation values suggest a high level of agreement among IT professionals, confirming that the system meets recognized software quality standards. Overall, the evaluation indicates that ResiLinked is technically sound and suitable for deployment as a localized employment platform.

### User Acceptance Evaluation (Technology Acceptance Model)

User acceptance of ResiLinked was assessed using the Technology Acceptance Model (TAM), focusing on the perceptions of informal workers and Information Technology (IT) professionals within the Municipality of Macabebe.

Table 2 Technology Acceptance of ResiLinked (TAM)

TAM Construct	Mean	SD	Interpretation
Perceived Usefulness	3.72	0.44	Very High

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Perceived Ease of Use	3.76	0.44	Very High
Behavioral Intention to Use	3.64	0.52	Very High
<b>Final Mean / SD</b>	<b>3.71</b>	<b>0.47</b>	<b>Very High</b>

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Table II indicates a “Very High” level of user acceptance, with a final mean of 3.71. Respondents confirmed that ResiLinked is easy to use, accessible, and effective in supporting localized job matching between informal workers and employers.

Among the constructs, Perceived Ease of Use obtained the highest mean score of 3.76, suggesting that the Tagalog-friendly interface and simplified system design significantly contributed to user satisfaction and accessibility. Perceived Usefulness also received a high rating, indicating that users recognize the platform’s value in improving employment opportunities and communication efficiency.

Meanwhile, Behavioral Intention to Use reflects strong willingness among respondents to continue using and recommending the system. The consistent standard deviation values indicate agreement across respondents, further validating the platform’s acceptance and usability in real-world deployment.

## Conclusion and Recommendations

### Conclusion

This study developed and evaluated ResiLinked, a localized web-based job portal designed to improve employment accessibility for informal workers within the Municipality of Macabebe, Pampanga. The platform successfully addressed the limitations of traditional and informal job-seeking practices by providing a secure, user-friendly, and skills-based employment matching system tailored to the needs of barangay communities.

The findings of the study indicate that ResiLinked effectively bridges the gap between informal workers and local employers through a simplified and community-centered digital environment. The implementation of a Tagalog-friendly interface, localized verification processes, and AI-assisted job matching significantly improved accessibility, usability, and trust among users. Unlike traditional online job portals that heavily rely on formal credentials and complex navigation, ResiLinked focused on practical skills, localized opportunities, and ease of use, making the platform more inclusive for individuals with low digital literacy.

Furthermore, the evaluation based on ISO/IEC 25010 standards revealed that the platform achieved a “Very High” rating in terms of functionality, usability, reliability, security, and performance efficiency. Similarly, the Technology Acceptance Model (TAM) results demonstrated a strong level of user acceptance, with respondents perceiving the platform as both useful and easy to use. These findings confirm that localized digital employment systems can effectively support informal workers and strengthen community-based employment opportunities.

Overall, the study concludes that ResiLinked serves as a viable and sustainable digital employment solution that promotes digital inclusion, strengthens local workforce engagement, and contributes to community-centered economic development within barangay communities.

## Recommendations

To further improve the effectiveness and long-term sustainability of the ResiLinked platform, the following recommendations are proposed:

1. **Mobile Application Development.** Develop a native mobile application version of ResiLinked to provide improved accessibility, push notifications, offline capabilities, and faster job applications for users with limited internet connectivity.
2. **Digital Literacy Training.** Collaborate with barangays, local government units (LGUs), and non-government organizations (NGOs) to conduct digital literacy programs that teach informal workers proper platform navigation, safe online practices, and effective use of digital employment services.
3. **LGU Integration.** Integrate the platform with Public Employment Service Offices (PESO) and barangay councils to establish ResiLinked as an official localized employment channel within the Municipality of Macabebe.
4. **System Enhancements.** Improve server scalability, optimize system performance, and expand language localization features to support a larger number of concurrent users and enhance accessibility for diverse communities.
5. **AI-Based Job Matching.** Further enhance the AI-assisted job matching feature by incorporating personalized recommendations based on workers' skills, location, previous applications, and employment history.
6. **Barangay Accreditation Program.** Introduce a worker accreditation or certification mechanism through barangay livelihood coordinators to recognize highly rated and verified workers, improving professionalism, trust, and employment opportunities within the informal sector.

By implementing these recommendations, ResiLinked can evolve into a more comprehensive and scalable digital employment platform capable of supporting wider community-based labor initiatives while continuously promoting inclusive and sustainable employment opportunities.

## Authors' Biography

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