

Research Article

Obrero: A Technological Solution to Youth Employment Challenges in the Post-Pandemic Era

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ABSTRACT

The COVID-19 crisis has significantly affected global employment, particularly impacting young workers in metropolitan areas who experience more persistent job losses. In the Philippines, many young workers struggle to find jobs that match their skills because of their limited years of experience and the high workforce supply in the country. To address these challenges, this paper proposes an on-demand job recruitment platform called Obrero that targets job seekers with national certificates. Obrero matches job seekers and employers through specialized assessment tools that evaluate applicants' skills. This platform also aligns applicants' qualifications with relevant opportunities from highly curated job listings and provides employers access to verified credentials, promoting transparency and trust while promising recruitment efficiency. Developed using Agile Scrum methodology, Obrero offers 21 modules for job seekers and employers. To determine the usability of this platform, 30 end users were asked to evaluate Obrero using the Post-Study System Usability Questionnaire (PSSUQ). The evaluation results show high system usefulness, interface quality, and information reliability levels. These results validate Obrero's ability to provide a practical solution that connects job seekers and employers efficiently and securely, thus facilitating a smooth job-matching experience.

1. INTRODUCTION

The COVID-19 pandemic caused an unprecedented disruption to global labor markets, resulting in an estimated 230 million full-time job losses in 2020 alone, with the most severe and persistent impacts observed in large metropolitan areas (Nicaj & Levanon, 2020; Cajner et al., 2020). Beyond immediate job losses, the crisis triggered a significant decline in labor force participation, as many displaced workers temporarily or permanently exited active job searching (Coibion et al., 2020). While employment levels have gradually recovered, this recovery has been uneven across sectors and

demographic groups, disproportionately affecting lower-wage and younger workers and raising concerns about the long-term stability of post-pandemic employment (Handwerker et al., 2020; Stan, 2022; Tóth et al., 2021).

One structural challenge exacerbated by the pandemic is the persistent mismatch between job seekers' skills and employers' demands. Prior to COVID-19, skill mismatches were already recognized as a key contributor to labor market inefficiencies and stagnant wage growth (Handel, 2003; Jordan & Aaronson, 2014). The pandemic

intensified this mismatch by accelerating shifts toward digitalization, automation, and non-traditional work arrangements, requiring job seekers to demonstrate verifiable and job-ready competencies rather than relying solely on formal educational credentials (Gibbs & Bazylik, 2017; Mantulenko et al., 2020). Consequently, employment recovery remains uncertain, particularly for young workers whose limited experience constrains their access to stable employment opportunities (Nicaj & Levanon, 2020; Handwerker et al., 2020).

In the Philippine context, youth unemployment remains a critical socio-economic issue. Nearly two-thirds of the unemployed population consists of young individuals, many of whom struggle to transition successfully from education to employment due to information asymmetry, limited work experience, and mismatches between skills and jobs (Pardalis & Mercado, 2009). Although the implementation of the K-12 program was intended to enhance employability by aligning education with labor market needs, evidence suggests that many graduates, particularly those in technical-vocational tracks, continue to face underemployment or unemployment despite holding national certifications (Asis, 2020; Okabe, 2021). Financial constraints further limit access to higher education, reinforcing cycles of precarious employment among youth (Thuy, 2021). While active labor market programs such as JobStart Philippines have demonstrated positive outcomes in improving employability and job readiness, these initiatives highlight the continuing need for scalable, technology-driven solutions that connect certified youth to relevant employment opportunities (Bird, 2018).

Advancements in information and communication technologies have reshaped job search and recruitment processes globally. Internet-based job search platforms have been shown to generate broader employment opportunities compared to traditional methods (Van Rooy et al., 2003), while social media and artificial intelligence increasingly influence recruitment practices (Singh, 2023). Data-driven and ontology-based job matching systems have further improved alignment between applicant skills and employer requirements (Fazel-Zarandi & Fox, 2009; Muthyalu et al., 2017). However, research also indicates that underserved job seekers—including youth and first-time workers—often face barriers in fully benefiting from these technologies due to inadequate credential verification, limited assessment mechanisms, and

trust issues between employers and applicants (Dillahunt et al., 2018).

The post-pandemic labor market has intensified the demand for transparent, flexible, and digitally mediated employment systems. Changes in job search behavior during and after the pandemic reveal reduced job search intensity among the unemployed and increased exploratory behavior among the employed, underscoring the evolving nature of labor market engagement (Balgová et al., 2022). At the same time, the rise of remote and hybrid work arrangements has introduced new challenges related to productivity, performance, and job satisfaction (Ramos & Prasetyo, 2020). These shifts reinforce the need for platforms that not only advertise job opportunities but also support reliable skill assessment, credential validation, and efficient matching processes in an increasingly digital labor market (Krylova et al., 2021; Polaski, 2016; Bocanet et al., 2021).

Despite the growing availability of online recruitment platforms, a critical gap persists in systems designed specifically for youth job seekers with national certifications, particularly in developing economies such as the Philippines. Existing platforms often emphasize general job listings without integrating structured skill assessments or verified credential mechanisms, limiting their effectiveness in addressing job-skill mismatches and employer trust concerns. This gap highlights the need for a targeted, assessment-driven employment platform that aligns certified skills with employer demands while ensuring transparency and credibility in the recruitment process.

To address this gap, this study presents Obrero, an on-demand job recruitment platform designed for undergraduate and youth job seekers holding national certificates. Obrero integrates curated job listings, structured skill assessments, and credential verification to facilitate efficient and trustworthy job matching between job seekers and employers. Developed using the Scrum framework to support iterative and user-centered system development (Vogelzang et al., 2019; Rodriguez et al., 2024), the platform aims to enhance recruitment efficiency while improving access to employment opportunities for certified youth.

The primary objective of this study is to design, develop, and evaluate the usability of the Obrero platform as a technological response to post-pandemic youth employment challenges. Specifically, the study assesses the system's usability in terms of system usefulness, interface quality, and information quality as perceived by end

users. By empirically evaluating Obrero's usability, this research contributes to the growing body of literature on technology-enabled employment solutions and provides practical insights into the design of inclusive, assessment-driven recruitment platforms for youth in emerging labor markets.

2. RELATED STUDIES

2.1 Technology for Job Seekers

The integration of technology into job search and recruitment processes has fundamentally reshaped how job seekers and employers interact. Early studies established that internet-based job search tools significantly outperform traditional job search methods in terms of reach and opportunity generation (Van Rooy et al., 2003). These findings underscore the role of digital platforms in expanding labor market access, particularly for first-time job seekers and individuals seeking flexible employment arrangements.

More recent research highlights the increasing influence of advanced technologies (e.g., social media, automation, and artificial intelligence) on recruitment practices. Singh (2023) emphasizes that modern recruitment systems now rely heavily on digital footprints and algorithm-driven matching, while Gibbs and Bazylk (2017) note that automation has transformed job design by shifting demand away from routine tasks toward skill-intensive and adaptive roles. These developments necessitate recruitment platforms that can meaningfully assess and represent applicants' competencies rather than merely listing qualifications.

To address these needs, data-driven, intelligent job-matching systems have been proposed. Muthyala et al. (2017) developed a job search engine that filters opportunities based on skill sets and organizational attributes, demonstrating the value of structured data in improving match quality. Similarly, Fazel-Zarandi and Fox (2009) introduced an ontology-based hybrid approach to recruitment, enabling semantic matching between job requirements and applicant profiles. These systems represent significant advances in precision matching; however, they are often designed for general labor markets and may not fully address the contextual challenges faced by underserved or entry-level job seekers.

Dillahunt et al. (2018) specifically examined employment application design for underserved populations, highlighting persistent barriers, including limited trust, lack of credential

verification, and inadequate assessment mechanisms. Their findings suggest that while technological solutions exist, many platforms fail to account for the unique needs of vulnerable job seekers, particularly youth with limited experience. Collectively, these studies demonstrate the potential of technology to improve job matching while simultaneously revealing a gap in platforms that integrate skill assessment, credential validation, and targeted support for certified youth.

2.2 The K12 Program and Job-Hunting Culture

The relationship between secondary education, part-time employment, and employability has been widely studied across different national contexts. Patton and Smith (2010) found that Australian high school students engaging in part-time work developed employability skills that positively influenced career outcomes. Similarly, studies in Ghana have shown that part-time students face complex challenges balancing work, academic responsibilities, and financial pressures, underscoring the structural difficulties associated with student employment (Siabi-Mensah et al., 2009). In the United Kingdom, Afir et al. (2022) further demonstrated that part-time work can influence learning outcomes, reinforcing the importance of understanding how employment intersects with education.

In the Philippines, the introduction of the K-12 program was intended to enhance workforce readiness by aligning secondary education with labor market requirements. Okabe (2021) describes the program as a national human resource development strategy designed to improve graduate employability. However, empirical evidence suggests that K-12 graduates, particularly those in technical-vocational tracks, continue to encounter difficulties in securing stable employment despite holding national certifications (Asis, 2020). This paradox highlights a persistent disconnect between certification attainment and labor market absorption.

Youth unemployment in the Philippines remains disproportionately high, with structural factors such as labor oversupply, limited access to higher education, and inadequate labor market information contributing to this challenge (Pardalis & Mercado, 2009; Thuy, 2021). Although active labor market programs like JobStart Philippines have demonstrated effectiveness in improving job readiness and employability, these initiatives also reveal the need for complementary digital platforms that can scale employment matching and provide continuous access to opportunities (Bird, 2018). The reviewed literature indicates that while educational

reforms and policy interventions exist, there remains a gap in technological systems that directly link certified youth to suitable employment through structured assessments and verified credentials.

2.3 Job Hunting in the Post-Pandemic Era

The COVID-19 pandemic has significantly altered job search behavior, labor demand, and employment structures worldwide. Studies show that the pandemic led to widespread unemployment and accelerated shifts toward digitalization and remote work, creating uncertainty in labor markets across regions (Polaski, 2016; Krylova et al., 2021). Businesses were compelled to re-evaluate operational strategies, prioritizing resilience, adaptability, and digital transformation (Bocanet et al., 2021).

Empirical evidence further indicates that job search behavior changed markedly during the pandemic. Balgová et al. (2022) observed reduced job search activity among unemployed individuals alongside increased search behavior among employed workers, suggesting heightened job insecurity and labor market volatility. In parallel, Mantulenko et al. (2020) emphasized the growing demand for digital competencies and the transformation of labor market values in response to technological change.

In the Philippine context, Ramos and Prasetyo (2020) examined work-from-home arrangements and found mixed effects on productivity, job satisfaction, and performance, illustrating the complexity of post-pandemic work structures. These findings suggest that while digital work arrangements offer flexibility, they also introduce new challenges related to job quality and performance evaluation. As employment systems continue to evolve, there is an increasing need for recruitment platforms that can support flexible, transparent, and reliable job matching while accounting for changing labor market dynamics.

Despite the proliferation of online job platforms in the post-pandemic era, existing systems often emphasize job listings over validated skill assessment and credential verification. This limitation is particularly consequential for youth job seekers with national certifications, whose employability depends heavily on demonstrating job-ready skills rather than formal work experience. The reviewed studies collectively underscore the necessity for targeted, assessment-driven employment platforms that respond to post-pandemic labor market shifts, providing the conceptual foundation for the development and evaluation of the Obrero platform.

3. METHODOLOGY

3.1 Research Design

This study employed a developmental research design, focusing on the systematic design, development, and evaluation of a functional software application intended to address a real-world problem: youth employment challenges in the post-pandemic context. Developmental research is appropriate for studies that aim to produce and validate technological artifacts, such as information systems or applications, through iterative development and empirical evaluation.

3.2 Requirements Gathering

Initial requirements were gathered through informal interviews and consultations with potential end users, including students, recent graduates, and employers. These discussions aimed to identify common challenges in job searching and recruitment, including skill mismatches, insufficient credential verification, inefficient screening processes, and limited access to suitable employment opportunities. From the analysis, the core system requirements were identified, including: User registration and authentication; Job posting and job search functionalities; Skill assessment and profiling; Credential and identity verification; Job matching based on assessment results; User dashboards for job seekers and employers; and reporting and account management features

3.3 System Architecture and Design

Obrero was designed as a mobile application with distinct user roles: administrators, job seekers, and employers. The system architecture followed a modular design to support scalability and maintainability. A total of 21 system modules, as shown in Figure 1, were identified and designed to handle various system functions, including user management, job management, assessment processing, profile management, and reporting. User interface design prioritized simplicity, clarity, and accessibility to ensure that users with varying levels of digital proficiency could navigate the system effectively. Separate dashboard interfaces were designed for job seekers and employers to reflect their different tasks and workflows within the system. This role-based interface design minimized cognitive load by presenting only relevant features to each user group. In addition, the modular structure enables future enhancements, such as integrating analytics, recommendation engines, or external employment platforms, without disrupting existing functionality.

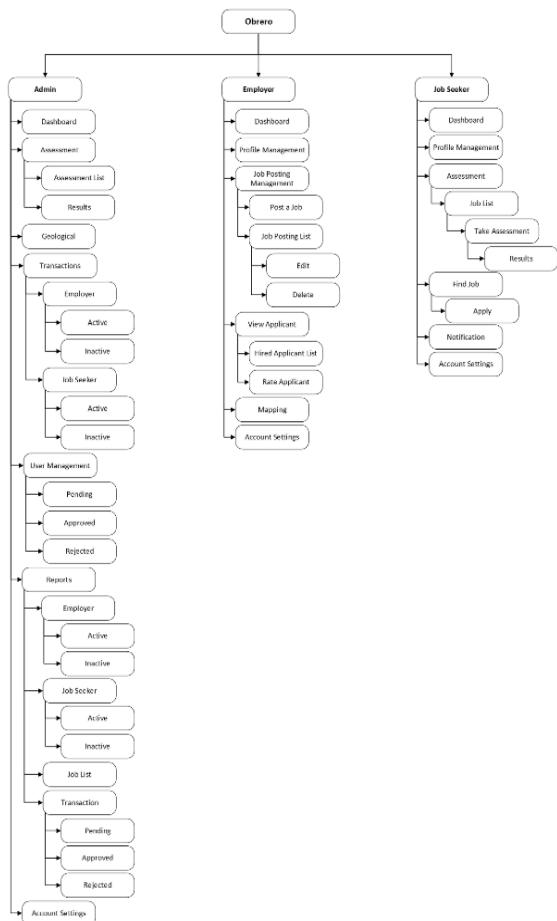


Figure 1. System Decomposition Chart.

3.4 System Development

The development of Obrero followed the Scrum framework, an Agile methodology suited to iterative system development and continuous stakeholder feedback. This iterative development approach ensured that system features were continuously improved based on feedback and testing outcomes. Scrum was selected due to its flexibility, emphasis on collaboration, and ability to accommodate evolving user requirements. The Scrum process was implemented through the following phases:

- 1). *Initiate Phase:* This phase involved defining the project scope, identifying stakeholders, and finalizing system requirements based on user input.
- 2). *Plan and Estimate Phase:* Development tasks were broken down into manageable units and organized into a product backlog. Task prioritization and effort estimation were conducted to guide sprint planning.
- 3). *Implement Phase:* System functionalities were developed incrementally through

multiple sprints. Each sprint focused on implementing specific modules and features, followed by internal reviews.

- 4). *Review and Retrospect Phase:* Completed features were reviewed to ensure they met functional requirements. Retrospective sessions were conducted to identify areas for improvement in both the system and development process.
- 5). *Release Phase:* The finalized version of Obrero was deployed for end-user testing and evaluation after undergoing basic validation and refinement.

3.5 System Testing

Testing was conducted throughout the development process to ensure system reliability, correctness, and usability. Multiple testing techniques were applied, including:

- Functional Testing to verify that system features performed as intended
- Integration Testing to ensure smooth interaction among system modules
- User Interface Testing to check navigation flow, layout consistency, and responsiveness

Testing activities focused on detecting errors, improving system stability, and ensuring that core functionalities (e.g., job matching, assessment results, and user dashboards) operated correctly before deployment for user evaluation.

3.6 System Evaluation

To evaluate Obrero's usability, a software usability assessment was conducted with 30 target end users, including potential job seekers and employers. The evaluation aimed to determine whether the system effectively met user needs and provided a satisfactory user experience.

- 1). *Evaluation Instrument:* The Post-Study System Usability Questionnaire (PSSUQ) was used as the evaluation instrument. The PSSUQ measures user perceptions of system usability across three dimensions: System Usefulness, Interface Quality, and Information Quality. Participants rated each item on a five-point Likert scale, with higher scores indicating more positive perceptions of usability.
- 2). *Data Collection Procedure:* Participants were asked to interact with the Obrero application and explore its core features, including account management, job

searching or posting, profile viewing, and assessment-related functionalities. Then, the participants completed the PSSUQ instrument to reflect on their experience using the system. Participation in the evaluation was entirely voluntary, and respondents were clearly informed of the study's purpose, scope, and procedures prior to their involvement. Informed consent was obtained from all participants before data collection commenced, and they were assured that their responses would be kept strictly confidential and used solely for research purposes. No personal information was collected, and all data were anonymized during analysis and reporting. Participants were also informed of their right to withdraw from the study at any stage without penalty.

3). *Data Analysis:* Collected responses were analyzed using descriptive statistics, specifically the computation of mean scores for each usability dimension and individual questionnaire items. The resulting mean values were interpreted using predefined descriptive ranges to determine the system's overall usability level. The analysis focused on identifying strengths and areas for improvement in system usefulness, interface quality, and information quality, providing empirical support for Obrero's effectiveness as a job-matching platform.

4. RESULTS AND DISCUSSION

4.1 System Functionalities and User Interfaces

Obrero was developed with 21 modules designed to support three user roles: admin, job seekers, and employers. These modules collectively support the end-to-end recruitment process, from applicant profiling to job matching and selection. The user interface was designed to be intuitive and role-specific. Separate dashboards were provided for job seekers and employers to reflect their distinct tasks within the system. Job seekers had access to assessment results, job listings, and profile management tools, while employers had access to job posting controls, applicant viewing features, and candidate evaluation tools. The interface design emphasized clarity, consistency, and ease of navigation to accommodate users with varying levels of digital proficiency. Figure 1(a) shows the Job Seeker User Interface, while Figure 1(b) shows the Employer User Interface.

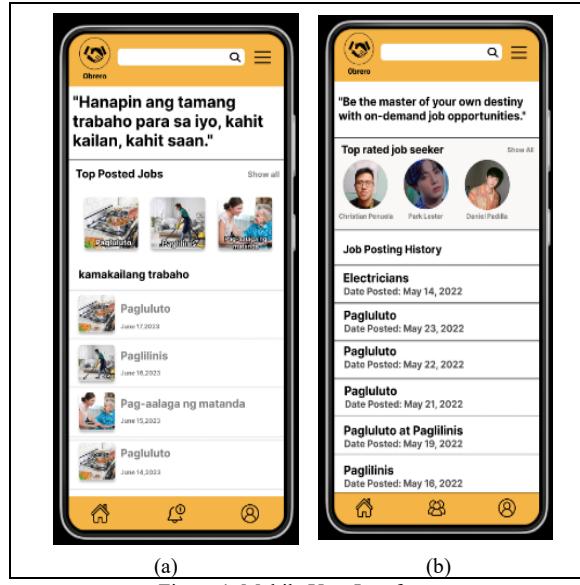


Figure 1. Mobile User Interface.

4.2 Usability Assessment Overview

To evaluate Obrero's usability, 30 target users participated in a system evaluation using the PSSUQ. Responses were measured on a five-point Likert scale, where higher mean scores indicate more positive user perceptions. Table 1 presents the interpretation guide used to classify usability levels, while Table 2 summarizes Obrero's overall usability results across the three PSSUQ dimensions.

Table 1. Interpretation of Mean Scores

Range	Interpretation
1.00—1.80	Very Low
1.81—2.60	Low
2.61—3.40	Moderate
3.41—4.20	High
4.21—5.00	Very High

Table 2. Summary of Usability Results.

Dimension	Mean	Interpretation
System Usefulness	4.08	High
Interface Quality	4.04	High
Information Quality	4.00	High
Overall Mean	4.04	High

The overall mean score of 4.04 indicates that Obrero achieved a high level of usability. This suggests that users generally perceived the system as useful, easy to use, and capable of providing reliable, understandable information. The results confirm that the system effectively meets its intended purpose of supporting job matching between certified job seekers and employers.

4.3 System Usefulness

System usefulness refers to the extent to which users perceive the application as effective in helping them accomplish their tasks efficiently. Table 3 presents the results for this dimension.

Table 3. System Usefulness Results.

Item No.	Mean	Interpretation
1	4.23	Very High
2	4.00	High
3	4.40	Very High
4	4.13	High
5	3.90	High
6	4.16	High
7	4.16	High
8	3.90	High
9	4.03	High
10	3.97	High
11	4.00	High
Average Mean	4.08	High

The high average mean score indicates that users found Obrero effective in improving productivity, reducing effort, and supporting task completion. High scores on efficiency and effectiveness items suggest that the platform successfully streamlines the job search and recruitment process. However, slightly lower scores on items related to user control imply that future system enhancements could focus on providing users with greater flexibility and customization options.

4.4 Interface Quality

Interface quality measures users' perceptions of system layout, consistency, responsiveness, and ease of use. Table 4 presents the results for this dimension.

Table 4. Interface Quality Results.

Item No.	Mean	Interpretation
12	4.10	High
13	4.13	High
14	4.10	High
15	4.20	High
16	4.07	High
17	4.10	High
18	3.80	High
19	3.93	High
20	3.93	High
Average Mean	4.04	High

The results indicate that users generally found the interface to be user-friendly, consistent, and visually organized. The high interface quality score suggests that the system design supports intuitive navigation and minimizes confusion during use. However, slightly lower scores on items related to independent use without written instructions suggest

a need for improved onboarding features, such as guided tutorials or contextual help.

4.5 Information Quality

Information quality refers to the clarity, completeness, relevance, and understandability of information presented by the system. Table 5 summarizes the results for this dimension.

Table 5. Information Quality Results.

Item No.	Mean	Interpretation
21	4.00	High
22	4.60	High
23	4.00	High
24	4.00	High
25	4.06	High
26	4.13	High
27	2.93	High
28	3.90	High
29	3.87	High
30	3.90	High
Average Mean	4.00	High

The findings show that Obrero provides accurate and relevant information that supports user decision-making during job search and recruitment. The very high score on item 22 reflects strong user confidence in the reliability of system information. However, the moderate score for item 27 indicates that users experienced some difficulty recalling system processes, suggesting that clearer visual cues or simplified workflows may further enhance information retention.

4.6 Discussion

Overall, the usability results demonstrate that OBRERO is a functional and effective recruitment platform that addresses key challenges in youth employment, particularly those related to skill matching and recruitment efficiency. The consistently high scores across all usability dimensions indicate that the system aligns well with user expectations and supports both job seekers and employers in accomplishing their goals.

The findings reinforce the value of assessment-driven, credential-verified recruitment platforms in addressing labor-market inefficiencies. By integrating usability evaluation into the development process, the study provides empirical evidence that user-centered design and iterative development can result in systems that are both practical and acceptable to end users. Areas identified for improvement (e.g., enhanced user control, onboarding support, and process memorability) offer clear directions for future system refinement and scalability.

5. CONCLUSION

This study presented the design, development, and usability evaluation of Obrero Obrero, an on-demand job recruitment application created to address youth employment challenges in the post-pandemic context. By focusing on job seekers with national certifications and employers seeking qualified candidates, the system addresses persistent issues of skill mismatch, limited work experience, and inefficient recruitment processes. The developmental approach enabled the creation of a functional, user-centered platform that integrates skill assessment, credential verification, and job-matching features within a single digital environment.

Using the Scrum framework, the study successfully developed Obrero as a modular system composed of 21 functional components designed to support administrators, job seekers, and employers. The iterative development process facilitated continuous refinement of system features and ensured alignment with user requirements. The usability evaluation involving 30 end users demonstrated that Obrero achieved a high level of system usefulness, interface quality, and information quality, indicating that the platform is effective in supporting job search and recruitment activities.

The findings suggest that technology-driven, assessment-based recruitment platforms can play a meaningful role in improving employment accessibility for certified youth, particularly in labor markets affected by post-pandemic disruptions. Obrero provides empirical evidence that integrating structured assessments and verified credentials into recruitment systems can enhance user trust and recruitment efficiency.

While the results are encouraging, the study was limited to a usability evaluation with a relatively small sample size. Future research may involve large-scale deployment, performance evaluation in real employment settings, and the integration of additional analytics or artificial intelligence-based matching mechanisms. Overall, the study contributes to applied research on digital employment systems and offers practical insights for developing inclusive, technology-enabled solutions for youth employment.

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DECLARATIONS

Conflict of Interest

The authors declare they have no conflict of interest.

Informed Consent

Participants in the software quality assessment provided consent before participating in any activity related to this study. The participants were duly informed of the goals of this study and that they could withdraw at any time without repercussion.

Ethics Approval

The CICT Ethics Review Committee of STI West Negros University approved and monitored this study from inception to completion.

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