

Development of an Online Integrated Decision Support Recruitment System for Niger Delta Development Commission NDDC

Jimoh Yusuf Omogbera¹, Taibat Onome Asunogie², Iniakpokeikiye Peter Thompson³

Department of Computer Science, Edo State University Iyamho^{1,2}

Department of Computer Science, Niger Delta University³

DOI: <https://doi.org/10.51244/IJRSI.2026.1313CS019>

Received: 26 June 2026; Accepted: 01 July 2026; Published: 15 July 2026

ABSTRACT

Recruitment and personnel selection are critical functions in public sector organizations because workforce quality directly influences institutional performance and service delivery. However, many government agencies in developing countries continue to rely on manual or semi-automated recruitment processes characterized by inefficiency, data redundancy, poor record management, and limited decision support capabilities. These challenges often result in delayed recruitment decisions, increased administrative workload, and difficulties in identifying qualified candidates. This paper presents the design and implementation of an Online Integrated Decision Support Recruitment System for the Niger Delta Development Commission (NDDC). The system was developed using the Structured Systems Analysis and Design Methodology (SSADM), which guided requirements analysis, system design, implementation, and testing. The proposed solution integrates applicant registration, vacancy management, application processing, candidate evaluation, decision support functions, and centralized information management within a web-based platform. The system was implemented using PHP, MySQL, HTML, CSS, JavaScript, and the XAMPP development environment. Evaluation results indicate that the developed system improved information accessibility, application processing efficiency, candidate assessment, and administrative control compared with the existing manual approach. By integrating recruitment management and decision support functionalities into a unified platform, the system enhances transparency, operational efficiency, and consistency in personnel selection. The study demonstrates the practical value of web-based recruitment technologies in modernizing workforce acquisition processes and supports the adoption of integrated information systems for effective human resource management in public sector institutions.

Keywords: applicant management, decision support systems, e-recruitment, human resource management, personnel selection, public sector information systems, workforce management.

INTRODUCTION

Human resources remain one of the most valuable assets of contemporary organizations because institutional success is largely determined by the competence, productivity, and commitment of employees (Boxall & Purcell, 2022). The recruitment and selection process therefore serves as a strategic mechanism through which organizations identify, attract, evaluate, and engage qualified personnel capable of achieving organizational objectives. In both private and public sector institutions, effective recruitment practices contribute significantly to improved organizational performance, enhanced service delivery, and sustainable development (Bondarouk et al., 2017; Boxall & Purcell, 2022). The increasing availability of information technologies has transformed traditional recruitment processes, enabling organizations to leverage web-based platforms, database systems, and decision support technologies to improve hiring outcomes and administrative efficiency (Stone et al., 2015).

The rapid evolution of digital technologies has encouraged organizations worldwide to migrate from conventional recruitment approaches toward electronic recruitment systems. Electronic recruitment platforms facilitate online advertisement of vacancies, electronic submission of applications, automated candidate screening, centralized data management, and improved communication between employers and applicants

(Abia & Brown, 2020; Nazreena, 2023). These systems reduce paperwork, minimize administrative bottlenecks, and provide organizations with access to larger pools of qualified candidates. Furthermore, decision support capabilities embedded within recruitment systems enable managers to make more informed hiring decisions based on objective criteria and comprehensive applicant information (Walek et al., 2021).

Despite these technological advancements, many public sector organizations in developing economies continue to experience significant challenges in their recruitment operations. Traditional recruitment procedures are often characterized by manual documentation, physical submission of applications, cumbersome verification procedures, and inefficient record management practices (Oluka & Shava, 2024). Such approaches frequently result in processing delays, increased operational costs, loss of critical information, duplication of records, and difficulties in identifying the most suitable candidates for available positions. The absence of integrated decision support mechanisms further limits the ability of recruitment officers to evaluate applicants consistently and efficiently, thereby affecting the overall quality of workforce acquisition (Riyadi & Rofiqoh, 2026).

The Niger Delta Development Commission (NDDC), established to facilitate sustainable development within the Niger Delta region, requires an effective workforce recruitment framework capable of supporting its operational objectives and institutional mandates (Niger Delta Development Commission, 2020; Ibaba, 2017). As the demand for qualified personnel continues to increase, the limitations of traditional recruitment practices become increasingly apparent. Existing recruitment processes are susceptible to inefficiencies associated with manual handling of applicant records, inadequate data organization, delayed decision making, and limited accessibility of recruitment information. These challenges create operational constraints that may hinder the timely acquisition of competent personnel and reduce the effectiveness of recruitment management activities ((Oluka & Shava, 2024).

Several studies have investigated the application of information systems and decision support technologies within human resource management environments. Existing research demonstrates that web-based recruitment systems can improve organizational efficiency, enhance transparency, reduce administrative costs, and support evidence-based decision making (Daniel, 2019; Adawiah & Putra, 2024). However, many available solutions focus primarily on online application submission without providing comprehensive integration between applicant management, recruitment administration, and decision support functionalities. In addition, relatively limited attention has been devoted to the design of recruitment systems tailored specifically to the operational requirements of public sector institutions in developing countries, where organizational structures, regulatory requirements, and resource constraints differ substantially from those of private enterprises (AbdulKareem et al., 2024).

The work reported in this paper addresses these challenges through the development of an Online Integrated Decision Support Recruitment System for the Niger Delta Development Commission. The proposed system provides a unified platform for vacancy management, applicant registration, application processing, candidate evaluation, and recruitment decision support. By integrating these functionalities within a centralized web-based environment, the system seeks to improve the efficiency, reliability, and transparency of recruitment operations (Power, 2018; Walek et al., 2021). The adoption of Structured Systems Analysis and Design Methodology ensures that the developed solution aligns with organizational requirements while maintaining scalability, maintainability, and usability characteristics necessary for long term deployment.

LITERATURE REVIEW

The growing adoption of information and communication technologies has significantly transformed human resource management practices across both public and private sector organizations. Among the most notable developments is the emergence of electronic recruitment systems, which leverage web technologies to automate and streamline personnel acquisition processes (Bondarouk et al., 2017; Abia & Brown, 2020). Electronic recruitment has evolved from simple online job advertisements to sophisticated platforms capable of managing applicant registration, document processing, candidate evaluation, communication, and decision support activities. Researchers have consistently argued that technology driven recruitment systems improve operational efficiency, reduce administrative costs, and enhance the quality of hiring decisions by providing

organizations with broader access to qualified applicants and more structured evaluation mechanisms (Daniel, 2019; Kuchеров & Tsybova, 2021).

Human Resource Information Systems (HRIS) form the technological foundation upon which modern recruitment systems are developed. HRIS solutions integrate personnel related information into centralized databases that support workforce planning, employee management, recruitment administration, and organizational decision making (Bondarouk et al., 2017). According to several scholars, the implementation of HRIS technologies enables organizations to improve data accuracy, reduce information redundancy, and enhance access to critical personnel records. These capabilities contribute significantly to organizational effectiveness by facilitating timely access to information required for strategic and operational decision making (Boxall & Purcell, 2022). Within recruitment environments, HRIS technologies support applicant tracking, vacancy management, candidate assessment, and reporting functions, thereby improving the efficiency of recruitment operations (Nazreena, 2023).

A substantial body of literature has examined the transition from traditional recruitment methods to electronic recruitment systems. Conventional recruitment processes often involve paper-based applications, manual record keeping, physical document verification, and extensive administrative procedures (Abia & Brown, 2020; Nazreena, 2023). These approaches are frequently associated with high operational costs, prolonged processing times, limited accessibility, and increased susceptibility to human errors. In contrast, web-based recruitment platforms provide automated mechanisms for collecting, storing, and processing applicant information. Researchers have reported that electronic recruitment systems significantly reduce paperwork, improve communication between applicants and employers, and enhance the overall speed of recruitment activities (Daniel, 2019; Kuchеров & Tsybova, 2021). Furthermore, online recruitment platforms facilitate the management of large applicant pools that would otherwise be difficult to process using manual methods.

The application of decision support systems within recruitment environments has attracted increasing scholarly attention because personnel selection often involves complex evaluation criteria and substantial volumes of applicant data. Decision Support Systems (DSS) are designed to assist managers and administrators in making informed decisions by providing analytical tools, structured information processing capabilities, and data driven recommendations (Power, 2018; Riyadi & Rofiqoh, 2026). Within recruitment contexts, DSS technologies support candidate screening, ranking, assessment, and selection processes by evaluating applicants against predefined organizational requirements (Walek et al., 2021). Several studies have demonstrated that recruitment decisions supported by computerized evaluation mechanisms tend to exhibit greater consistency, transparency, and objectivity than decisions based solely on manual judgment (Akhif et al., 2023; Karrenbauer et al., 2024). These findings underscore the importance of integrating decision support capabilities into contemporary recruitment information systems.

Recent developments in web engineering have further expanded the capabilities of recruitment systems through the integration of interactive interfaces, dynamic content management, and real time information processing. Modern web-based recruitment applications typically incorporate user authentication, online application forms, automated notification systems, candidate tracking mechanisms, and administrative dashboards (Nazreena, 2023). Researchers have reported that user centered interface design significantly influences the effectiveness of recruitment platforms by improving system usability, accessibility, and user satisfaction. The incorporation of responsive web technologies also enables applicants and administrators to access recruitment services from various devices and locations, thereby enhancing the overall flexibility of recruitment operations (Adawiah & Putra, 2024; Consolata & Wachira, 2024).

Several empirical studies have focused specifically on recruitment automation within government agencies and public sector institutions. These studies generally conclude that digital recruitment systems contribute to improved transparency, accountability, and administrative efficiency (AbdulKareem et al., 2024). Public organizations often face unique recruitment challenges arising from regulatory requirements, large applicant populations, and the need for equitable candidate evaluation procedures. Consequently, automated recruitment systems have been recommended as effective tools for addressing these challenges through standardized information processing and objective candidate assessment mechanisms (Adawiah & Putra, 2024). Nevertheless, researchers note that successful implementation requires careful alignment between

technological solutions and organizational policies to ensure compliance with administrative and legal requirements (Gil Garcia et al., 2018; Bondarouk et al., 2017).

The literature also highlights several limitations associated with existing recruitment systems. Many available platforms concentrate primarily on facilitating online application submission while providing limited support for intelligent candidate evaluation and decision making (Riyadi & Rofiqoh, 2026; Walek et al., 2021). Some systems lack comprehensive integration between recruitment management functions, resulting in fragmented workflows and reduced administrative efficiency. Other studies report challenges related to data security, scalability, system maintainability, and user adoption (Leicht-Deobald et al., 2019; Stone et al., 2015). Furthermore, a considerable proportion of recruitment technologies have been developed for commercial organizations and may not adequately address the operational requirements of public sector institutions operating within developing economies (Oluka & Shava, 2024). These limitations indicate the need for recruitment solutions that combine applicant management, centralized information processing, and decision support capabilities within an integrated framework tailored to specific organizational contexts.

Research Gap

Despite the substantial progress reported in the literature, several research gaps remain evident. Existing studies frequently address electronic recruitment, human resource information systems, and decision support technologies as separate domains rather than as integrated components of a unified recruitment framework (Abia & Brown, 2020; Riyadi & Rofiqoh, 2026). Additionally, limited research has focused on recruitment systems designed specifically for public sector agencies within Nigeria and comparable developing environments. Many existing solutions provide applicant registration and vacancy management functionalities but lack comprehensive decision support features capable of assisting recruitment officers during candidate evaluation and selection (Walek et al., 2021; Akhif et al., 2023). Furthermore, the challenges associated with centralized recruitment data management, transparent candidate assessment, and efficient administrative coordination continue to affect many public institutions.

However, our study addresses these existing gaps through the design and implementation of an online integrated decision support recruitment system for the Niger Delta Development Commission (NDDC). Unlike many existing approaches, the proposed system combines web-based recruitment management with decision support functionalities within a centralized information processing environment. The integration of applicant registration, vacancy administration, candidate evaluation, database management, and decision support mechanisms provides a comprehensive solution aimed at improving recruitment efficiency, transparency, and decision quality in public sector workforce management.

METHODOLOGY

This study adopted the Structured Systems Analysis and Design Methodology (SSADM) to guide the development of the proposed system. SSADM was selected because it provides a systematic framework for requirements analysis, process modeling, database design, implementation, and testing. Data relating to the existing recruitment process were obtained through observation, document analysis, and workflow examination. The investigation revealed challenges such as manual application handling, fragmented record management, inefficient candidate tracking, delayed recruitment decisions, and limited decision support capabilities. These findings were used to define the functional and nonfunctional requirements of the proposed system. System stakeholders identified during the analysis phase included applicants, recruitment administrators, human resource personnel, and management staff. The methodology further involved logical system modeling using data flow techniques, database design, implementation using web technologies, and comprehensive testing. Unit, integration, and user acceptance tests were conducted to verify system functionality, reliability, and compliance with specified requirements.

System Design

The proposed system was designed as a web-based client server application that centralizes recruitment management and decision support activities. The architecture consists of three layers: the presentation layer,

which provides user interaction through web interfaces; the application layer, which contains the business logic for recruitment processing and decision support; and the data layer, which manages information storage using a MySQL database. Core modules include applicant registration, vacancy management, application processing, candidate evaluation, recruitment administration, and reporting. Applicants can register, submit applications, and monitor recruitment activities online, while administrators manage vacancies, review applications, and support candidate selection. A relational database structure was developed to ensure data integrity, consistency, and efficient information retrieval. The system was implemented using PHP, MySQL, HTML, CSS, and JavaScript within the XAMPP environment. Authentication and role-based access controls were incorporated to enhance security and restrict access to authorized users only.

System Architecture

The proposed Online Integrated Decision Support Recruitment System was designed to provide a centralized platform for managing recruitment activities within the Niger Delta Development Commission (NDDC).

Figure 1 below presents the architecture of the proposed system:

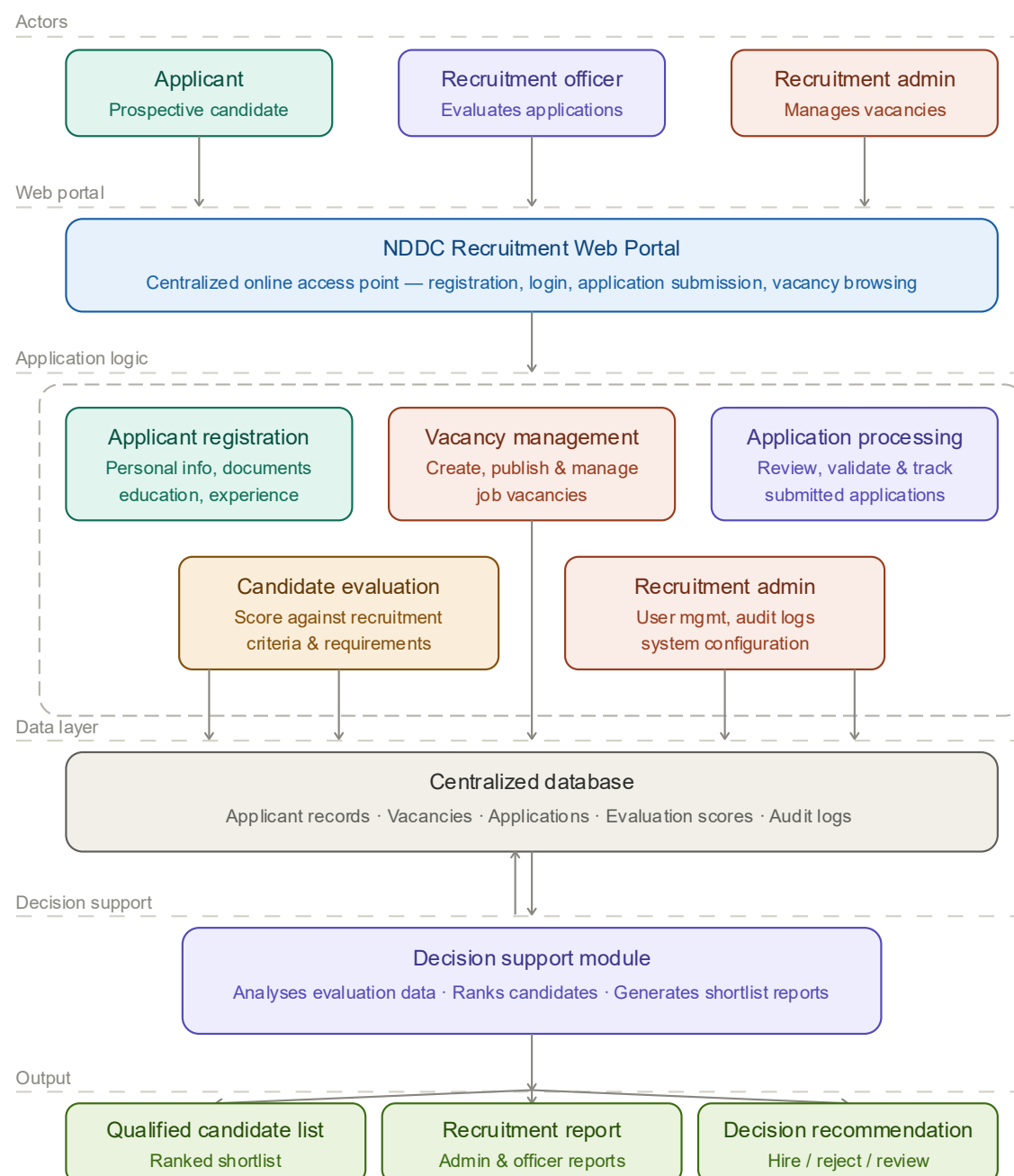


Figure 1: System Architecture

The system architecture as seen in figure 1 integrates applicant registration, vacancy management, application processing, candidate evaluation, recruitment administration, and decision support functions. Recruitment administrators create and publish vacancies through the system, after which prospective applicants register and submit their personal information, educational qualifications, work experience, and supporting documents online. Submitted applications are stored in a centralized database for administrative review and processing. Recruitment officers evaluate applications based on specified recruitment requirements and utilize the decision support functionality to identify qualified candidates.

RESULTS

Figures 2, 3, 4 and 5 provide some of the implementation results/outputs of our proposed system

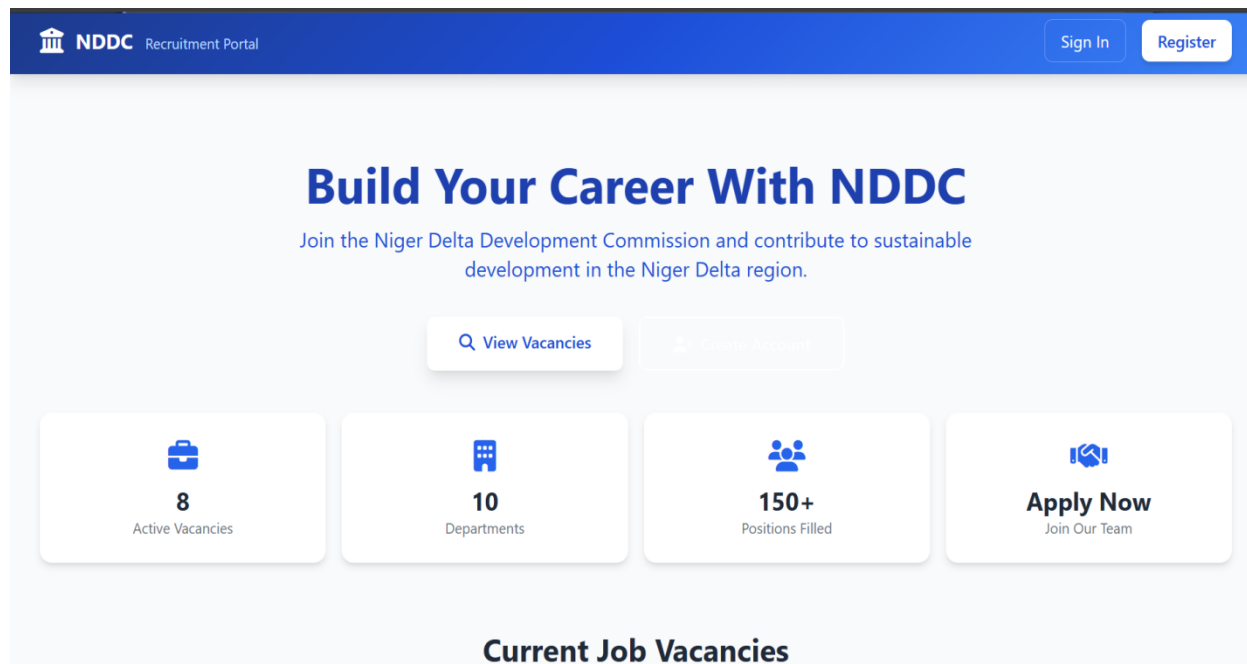


Figure 2: Homepage of the System

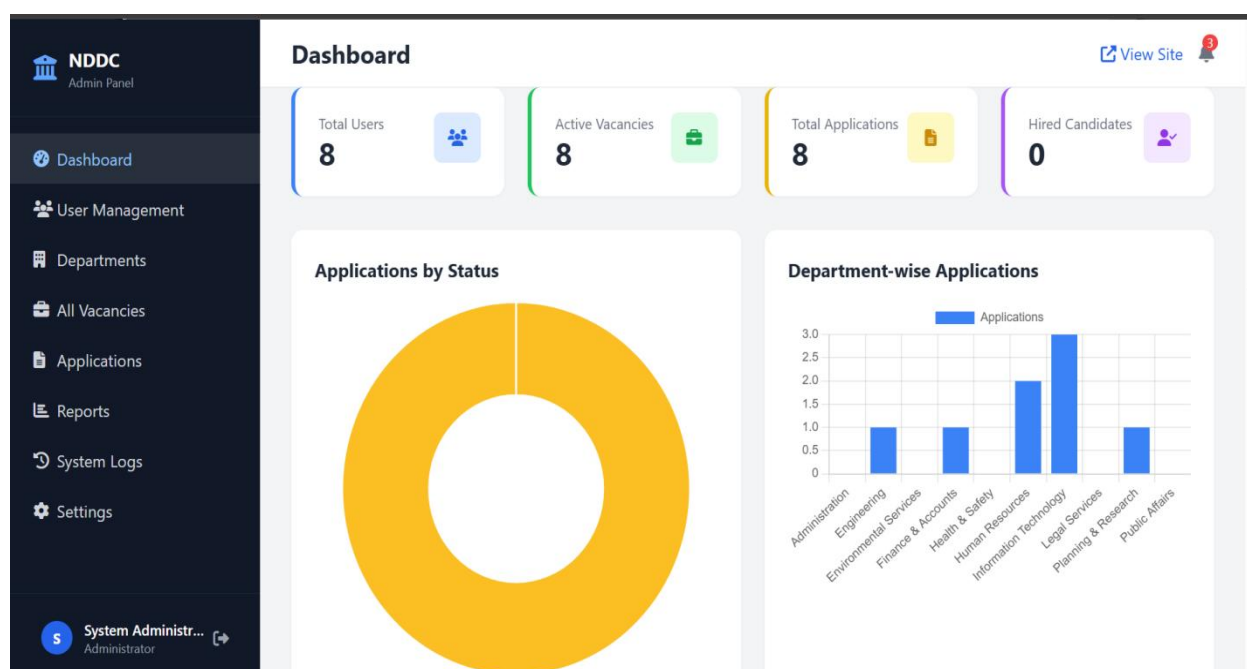


Figure 3: Admin Dashboard Module of the System

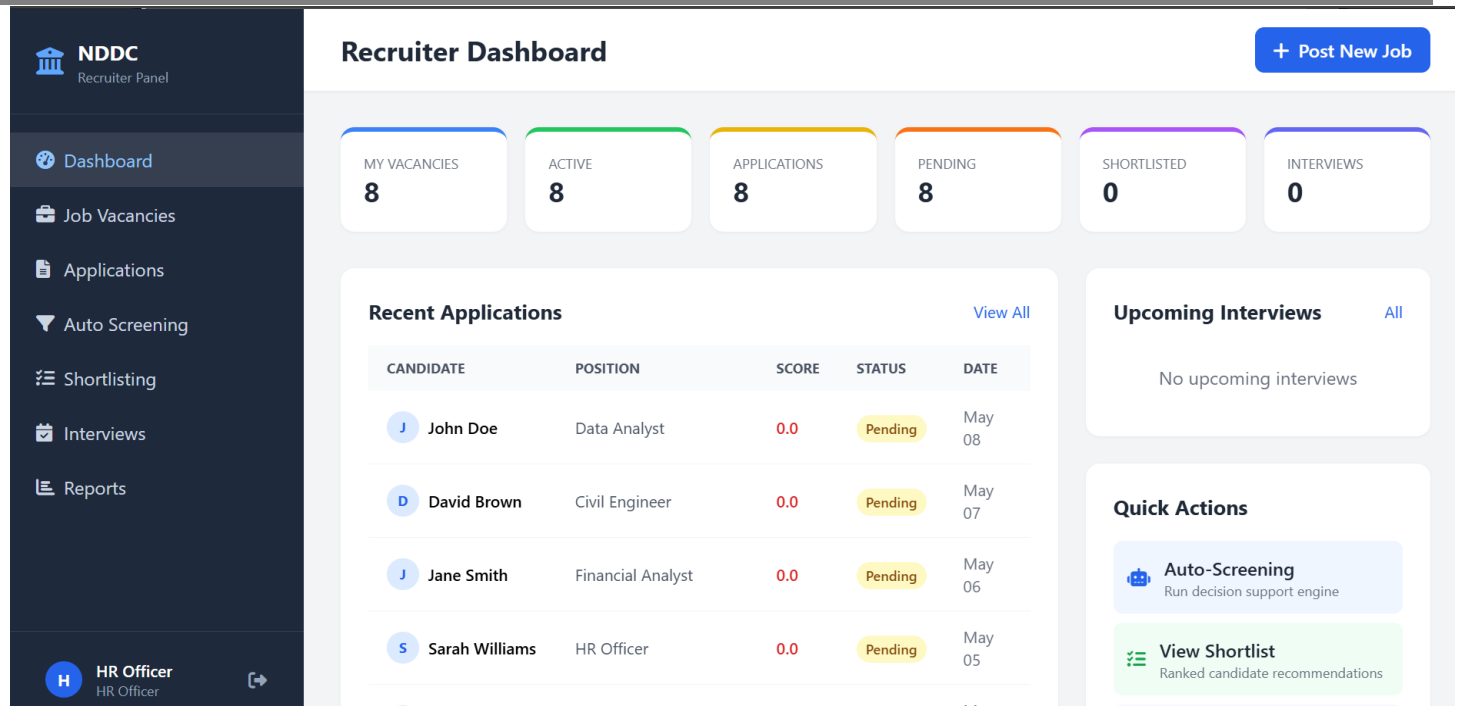


Figure 4: Recruiter Dashboard Module of the System

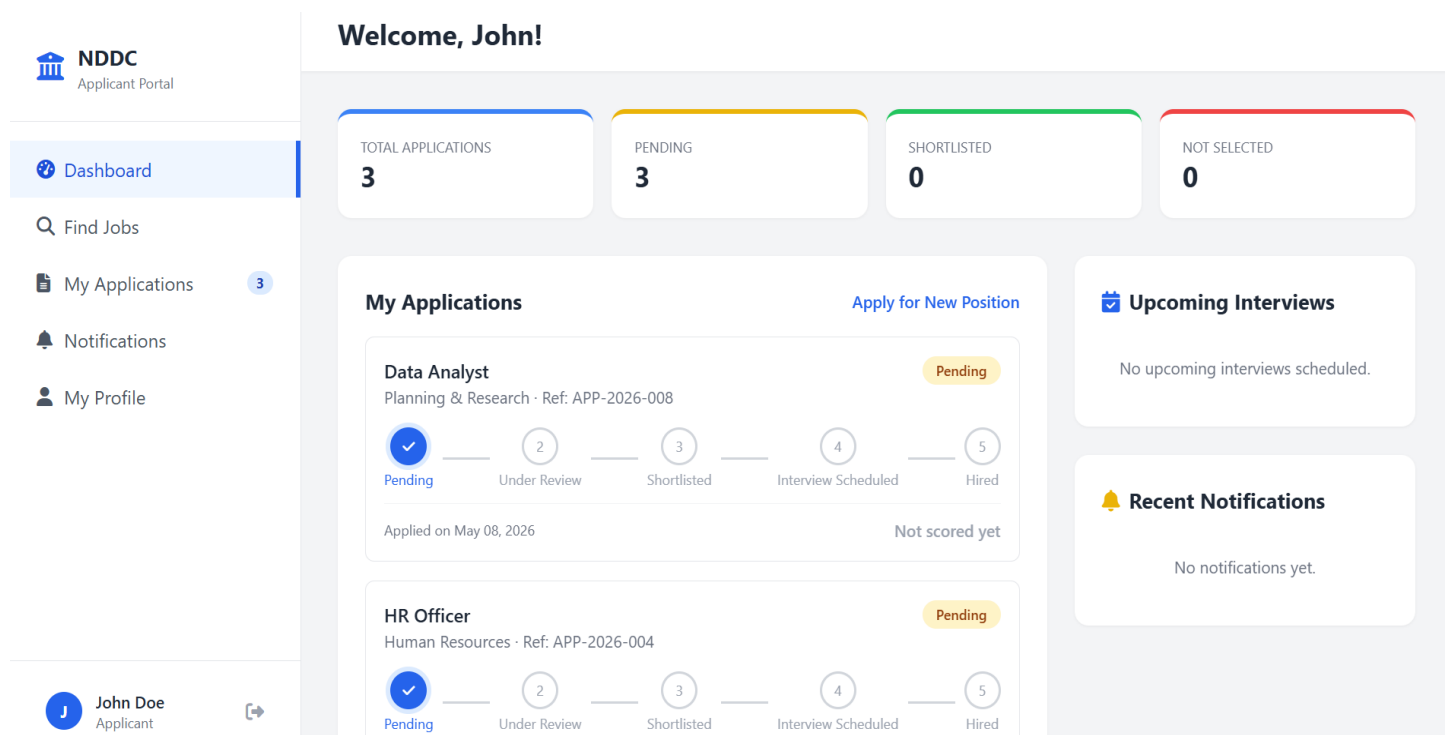


Figure 5: Applicant Dashboard Module of the System

DISCUSSION OF RESULTS

The online integrated decision support recruitment system was successfully implemented using PHP, MySQL, HTML, CSS, JavaScript, and XAMPP. The completed application integrates applicant registration, vacancy management, application processing, candidate evaluation, recruitment administration, and decision support functionalities within a centralized environment. Applicants can register, submit credentials, and apply for vacancies electronically, while recruitment administrators can manage vacancies, review applications, and support candidate selection. The implementation addressed the limitations of the existing manual recruitment process by improving information accessibility, reducing paperwork, and enhancing the management of applicant records.

Functional testing was conducted to evaluate the performance of the developed system. The testing process covered user registration, authentication, vacancy management, application submission, candidate evaluation, and administrative operations. Results showed that all modules performed according to their intended specifications and interacted correctly with other system components. No critical functional errors were observed during testing, indicating that the system met its operational requirements.

Table 1 presents the functional testing results of the system

Module	Expected Outcome	Observed Outcome	Status
User Registration	Successful account creation	Account created successfully	Pass
User Authentication	Secure login access	Login validated correctly	Pass
Vacancy Management	Vacancy creation and update	Function executed successfully	Pass
Application Submission	Successful application processing	Data stored correctly	Pass
Candidate Evaluation	Retrieval and assessment of applicants	Information displayed accurately	Pass
Administrative Control	Management of recruitment records	Functions performed correctly	Pass

The results demonstrate that the proposed system provides a reliable and efficient platform for recruitment management within the NDDC. Compared with the existing manual approach, the system improves application processing, candidate evaluation, information retrieval, and administrative control. The integration of decision support functionality further enhances the consistency and effectiveness of recruitment decisions by providing structured applicant information for assessment. These findings confirm the suitability of the system for supporting modern recruitment operations in public sector organizations.

CONCLUSION

This paper presented the development of an Online Integrated Decision Support Recruitment System to address the inefficiencies, delays, and administrative challenges associated with the manual recruitment process of the Niger Delta Development Commission (NDDC). Using the Structured Systems Analysis and Design Methodology (SSADM), a web-based system was designed and implemented to support applicant registration, vacancy management, application processing, candidate evaluation, and recruitment administration. The results of system implementation and functional testing demonstrated that the proposed solution improved information accessibility, recruitment efficiency, candidate assessment, and administrative control. By integrating recruitment management and decision support functionalities within a centralized platform, the system promotes greater transparency, consistency, and effectiveness in personnel selection. The study therefore provides a practical and scalable approach to modernizing recruitment operations in public sector organizations. Future enhancements may incorporate artificial intelligence and advanced analytics to further improve recruitment decision making and workforce planning.

REFERENCES

1. AbdulKareem, A. K., Oladimeji, K. A., Ishola, A. A., Bello, M. L., Umar, A. Y., & Adejumo, A. (2024). Investigating ICT Adoption and Public Value of E-Recruitment in the Public Sector: The Role of Social Media Use. *International Journal of Public Sector Management*, 37(2), 284–304. Retrieved from: <https://doi.org/10.1108/IJPSM-10-2023-0307>
2. Abia, M., & Brown, I. (2020). Conceptualizations of E-Recruitment: A Literature Review and Analysis. In M. Hattingh et al. (Eds.), *Electronic government and electronic participation* (pp. 370–379). Springer. Retrieved from: https://doi.org/10.1007/978-3-030-45002-1_32

3. Adawiah, A., & Putra, A. H. P. K. (2024). The Impact Of E-Recruitment Implementation On Company Credibility, Candidate Selection Efficiency, And Process Transparency: Job Applicants' Perspective. *International Review of Management and Marketing*, 14(5), 126–139. Retrieved from: <https://doi.org/10.32479/irmm.16721>
4. Akhif, M., Andini, S., & Akhiyar, D. (2023). Implementation of a Decision Support System for Contract Employee Recruitment Selection using the Simple Multi-Attribute Rating Technique (SMART) Method. *Journal of Computer Science and Information Technology*, 9(3), 165–169. Retrieved from: <https://doi.org/10.35134/jcsitech.v9i3.82>
5. Bondarouk, T., Parry, E., & Furtmueller, E. (2017). Electronic HRM: Four Decades of Research on Adoption and Consequences. *The International Journal of Human Resource Management*, 28(1), 98–131. Retrieved from: <https://doi.org/10.1080/09585192.2016.1245672>
6. Boxall, P., & Purcell, J. (2022). *Strategy and Human Resource Management* (5th ed.). Red Globe Press.
7. Consolata, M. A., & Wachira, R. M. (2024). Leveraging Social Media and Advanced Technologies for Enhanced Recruitment Strategies in the Corporate Sector. *i-manager's Journal on Management*, 19(1), 42-50. Retrieved from: <https://doi.org/10.26634/jmgt.19.1.20910>
8. Daniel, C. O. (2019). Impact of E-Recruitment on Organizational Performance. *International Journal of Economics, Business and Management Research*, 3(3), 195-206. Retrieved from: https://www.ijebmr.com/uploads/pdf/archivepdf/2020/IJEBMR_358.pdf
9. Gil Garcia, J. R., Dawes, S. S., & Pardo, T. A. (2018). *Digital Government and Public Management*. Routledge.
10. Ibaba, S. I. (2017). Understanding the Niger Delta Crisis. *African Journal of Political Science and International Relations*, 11(5), 123-134.
11. Karrenbauer, C., Gerlach, J., & Breitner, M. H. (2024). Decision Support Framework for IT Project Manager Recruitment. *Heliyon*, 10(3), e24685. Retrieved on the 2nd of January 2026 from: <https://doi.org/10.1016/j.heliyon.2024.e24685>
12. Kuchеров, D.G., & Tsybova, V.S. (2021). The Contribution of E-Recruitment Practices to E-Recruitment Outcomes in Russian companies. *Measuring Business Excellence*, 26 (3), 366-377.
13. Leicht-Deobald, U., Busch, T., Schank, C., Weibel, A., Schafheitle, S., Wildhaber, I., & Kasper, G. (2019). The Challenges of Algorithm-Based HR Decision-Making for Personal Integrity. *Journal of Business Ethics*, 160(2), 377–392. Retrieved from: <https://doi.org/10.1007/s10551-019-04204-w>
14. Nazreena, R. F. (2023). E-Recruitment Strategies for Effective Recruitment: Perception of Recruiters in Chennai Region. *i-manager's Journal on Management*, 18(1), 37–44. <https://doi.org/10.26634/jmgt.18.1.19925>
15. Niger Delta Development Commission. (2020). *Annual Report*. Niger Delta Development Commission.
16. Oluka, A. M., & Shava, E. (2024). Digital Transformation in Hiring and Selection Processes: A Ugandan Public Sector Perspective. In *Digital Transformation in Public Sector Human Resource Management* (pp. 119–). IGI Global. Retrieved from: <https://doi.org/10.4018/979-8-3693-2889-7.ch006>
17. Power, D. J. (2018). *Decision Support, Analytics, And Business Intelligence* (10th ed.). Business Expert Press.
18. Riyadi, M., & Rofiqoh, I. (2026). Analysis of Methods and Challenges of Decision Support Systems in Employee Recruitment: A Systematic Literature Review. *Journal of Indonesian Management*, 5(4), 11. Retrieved from: <https://doi.org/10.53697/jim.v5i4.3738>
19. Stone, D.L., Deadrick, D.L., Lukaszewski, K.M., & Johnson, R.D. (2015). The Influence of Technology on the Future of Human Resource Management. *Human Resource Management Review*, 25, 216-231. Retrieved on the 4th of November 2025 from: <https://www.semanticscholar.org/paper/The-influence-of-technology-on-the-future-of-human-Stone-Deadrick/48d7a21d9ad8bd98ad826d21cce8d5a966abd378>
20. Walek, B., Pektor, O., & Farana, R. (2021). Decision Support System for Evaluating Suitable Job Applicants. *Mathematics*, 9(15), 1773. Retrieved from: <https://doi.org/10.3390/math9151773>