

Administration Digital Support System (ADSS)

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Abstract

This study developed and evaluated the Administration Digital Support System (ADSS), a web-based platform designed to support the generation, storage, retrieval, review, visualization, downloading, and printing of selected school administrative reports. The system was anchored in Data Quality Theory, the Technology Acceptance Model, and Human-Computer Interaction and Usability Theory. Developmental and descriptive research designs were employed, with the Agile System Development Life Cycle guiding system development. Twenty respondents, consisting of five school heads and fifteen designated office heads from five public high schools in Kibawe and Damulog, Bukidnon, were purposively selected. A structured survey questionnaire incorporating the Post-Study System Usability Questionnaire and technology acceptance and acceptability measures was used, while data were analyzed using frequency count, percentage distribution, and mode. The ADSS provided role-specific dashboards and centralized the management of BMI, incident, bullying, child mapping, and Curriculum Management Support System reports. Results showed that the system was Highly Acceptable in user interface, data storage and retrieval, report generation, and overall acceptability. The study concluded that the ADSS performed well in the evaluated areas and was suitable for routine administrative tasks. Recommended improvements include standardized report formats, enhanced report content, offline functionality, additional report types, stronger security mechanisms, continuous user feedback and evaluation, and broader system implementation. The study supports SDG 4 (Quality Education), SDG 3 (Good Health and Well-Being), SDG 9 (Industry, Innovation and Infrastructure), and SDG 16 (Peace, Justice and Strong Institutions). The ADSS contributes to educational, technological, and institutional sustainability by supporting organized reporting, accessible records, monitoring, and data-informed school administration.

Keywords: Administration Digital Support System; Data Management; Digital Reporting; School Administration; System Acceptability; Web-Based System

1. Introduction

Effective school administration requires systematic planning, coordination, reporting, and data-informed decision-making. School management operates within established educational policies and objectives (Kirthika, 2022), while digital applications increasingly automate administrative and academic processes and improve institutional efficiency (Sethi & Malhotra, 2023; Innatos, n.d.). Management systems provide timely and organized information for decision-making (Abulencia et al., 2022), institutional planning and performance evaluation (Aprilla et al., 2023; Asio et al., 2022), and evidence-based administration (OECD, 2023). However, difficulties in documentation, accessibility, report preparation, duplication, and workload remain evident in schools (Ramos, 2025). These concerns provide the basis for developing the Administration Digital Support System (ADSS) as a

web-based platform for generating, storing, reviewing, visualizing, downloading, and printing selected school reports.

Digital management systems have become important in addressing the increasing complexity of school administration. Digital MIS implementation has improved performance evaluation and report preparation (Aprilla, Rasyid, Jumarwa, & Arisal, 2023), while student management systems have supported data-driven administrative decisions (Ndung'u, Ondiek, & Opiyo, 2019). EMIS has likewise contributed to institutional efficiency, transparency, and accountability, although infrastructure, training, and organizational readiness remain implementation concerns (Ahmad, 2024). Digital systems can also support strategic planning and resource optimization (Adhikari, Budhathoki, and Adhikari, 2024), strengthen stakeholder transparency (Mariono and Sabar, 2023), and improve the speed and accuracy of administrative processes (Ngey, 2024). Usability is equally important to successful implementation. Perceived ease of use influences technology acceptance (Davis, 1989), while clear and accessible interfaces encourage satisfaction and adoption among educational users (Liday & Agapito, 2020; Acala & Talirongan, 2023). These findings support the development of ADSS as a system that combines administrative functionality with an accessible user interface.

Effective digital reporting depends on accurate report generation, accessible data, and reliable system architecture. Electronic school systems have demonstrated efficient academic reporting (Grepon et al., 2021), accessible digital record processing (Pagay-Cierva, 2024), and automated communication of school information (Estremera & Ciar, 2022). Clear and structured reports further improve users' ability to interpret information for decision-making (Al-Fraihat et al., 2020). Web-based management systems commonly use presentation, business logic, and data-access components supported by technologies such as HTML, CSS, JavaScript, PHP, and MySQL (Walls, 2015; Horstmann, 2018). Reliable data retrieval influences user satisfaction (Al-Fraihat et al., 2020), while information accuracy contributes strongly to end-user satisfaction (Hidayah et al., 2021). PHP has demonstrated reliable performance in academic and management systems (Niarman, Iswandi, and Candri, 2023; Yudiastuti and Irwansyah, 2024; Mulyadi et al., 2024), while layered architecture improves modularity, scalability, and maintainability (Belle et al., 2021; Tu, 2023). PHP frameworks further support organized system development through separation of interface, processing, and data functions (Huynh et al., 2022; Khan & Khanam, 2023). MySQL provides efficient storage and retrieval for management systems (Wei, 2024; Šušter and Ranisavljević, 2023; Rawat, Purnama, and Mulyati, 2021) and offers an open-source database option suitable for small- to medium-scale applications (Oracle, 2024). Combined PHP and MySQL implementations have improved record accessibility, reduced errors, supported real-time information management, and facilitated reliable reporting (Halim, Abdullah, and Tuan Mohd Yasin, 2022; Ilham and Faizah, 2023; Herlina et al., 2024). Because institutional systems handle sensitive information, authentication, access controls, encryption, monitoring, backup, and validation are also necessary to protect data integrity (Faizan, Riaz, and Saif, 2024; Nawusu et al., 2024; Bing and Farhana, 2024).

Manual school reporting remains associated with delays, repetitive work, and human error (Sih, 2024), while fragmented data collection consumes administrative time that could otherwise support strategic and instructional responsibilities (Kumar & Raj, 2023). Limited integration can restrict real-time information access (AcademiaERP, 2023), and inadequate infrastructure and digital literacy can further hinder automation (Patel & Mehta, 2022). Fragmented databases also complicate report consolidation (Rahman et al., 2021), while data-quality and interoperability problems constrain educational dashboards (Inter-American Development Bank, 2025; Education Advancement Foundation, 2024). Limited analytical capacity can further restrict the transformation of institutional data into actionable information (CliftonLarsonAllen, 2022). Existing school systems also face data overload, cybersecurity, and access concerns (Zheng, 2024). Within DepEd systems, inconsistent data entry, technical-support limitations, and downtime have affected reporting and monitoring (Hubahib and Oliveros, 2025), while School-Based Management continues to encounter challenges involving documentation, performance monitoring, resource allocation, and alignment with school needs (Ramos, 2025). These concerns are particularly relevant because schools maintain mandated reports involving bullying, nutritional status, incidents, child mapping, and curriculum monitoring. DepEd directives institutionalize reporting for learner protection, health monitoring, enrollment access, and curriculum implementation (Department of Education – Division of Capiz, 2025; Department of Education – Division of Imus City, 2025; Department of Education – Division of Quezon Province, 2024; DepEd Region I, 2022; DepEd, 2018; DepEd Division of Lanao del Norte, 2021; DepEd Division of Cagayan de Oro, 2022; DepEd Division of Bukidnon, 2021). Thus, organized digital reporting can support schools in maintaining accessible and consolidated administrative information.

The ADSS is grounded in Data Quality Theory, the Technology Acceptance Model (TAM), and Human-Computer Interaction (HCI) and Usability Theory. Wang and Strong's (1996) Data Quality Theory emphasizes intrinsic, contextual, representational, and accessibility dimensions of information quality. Applied to ADSS, these dimensions support accurate, timely, understandable, and accessible school reports. According to Davis (1989), in his Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use influence users'

acceptance of technology. These concepts support ADSS features intended to improve productivity while maintaining straightforward navigation. The study is also based on Human-Computer Interaction (HCI) and Usability Theory (Card, Moran, & Newell, 1983; Nielsen, 1993; Shneiderman, 2010), emphasizing effective, efficient, and understandable interaction between users and digital systems. The conceptual model follows an input-process-output sequence. Ideas, reference materials, tools, equipment, and technical inputs undergo planning, designing, developing, testing, revising, and evaluating to produce the Administration Digital Support System.

Existing educational technologies provide centralized databases, dashboards, role-based access, automated workflows, reporting, remote access, and data management. However, the prior-art comparison in the study shows that the examined systems do not integrate all features proposed for ADSS. Although dashboards and report generation are common, approve/decline report functionality and data visualization are absent from all three compared systems, while database and print/download capabilities vary among them. The gap is further reinforced by continuing problems involving manual reporting, fragmented information, accessibility, repetitive administrative tasks, and limitations of existing school management systems. The ADSS therefore integrates school-head and office-head dashboards, report generation, data storage and retrieval, approval or rejection, data visualization, and electronic report outputs into one school-based platform. Accordingly, the study aims to develop and evaluate the ADSS in terms of user interface, data storage and retrieval, report generation, and acceptability. The study covers five public high schools in Kibawe and Damulog, Bukidnon and involves school heads and designated office heads from the School Clinic, Guidance Office, and Program Implementation Review/Monitoring & Evaluation (PIR/M&E).

The ADSS is primarily aligned with SDG 4 – Quality Education because it supports organized school administration and evidence-informed management. Its BMI and health and nutrition reporting functions also relate to SDG 3 – Good Health and Well-Being by supporting the monitoring of learners' nutritional status. Its web-based reporting, database, and visualization functions relate to SDG 9 – Industry, Innovation and Infrastructure through the application of digital technology to school administrative processes. The system also supports aspects of SDG 16 – Peace, Justice and Strong Institutions through systematic documentation, administrative review, accountability, and accessible institutional records.

The ADSS contributes to educational sustainability by supporting consistent access to information for school planning, monitoring, and decision-making. It contributes to technological sustainability by applying web-based reporting, centralized data management, and visualization to recurring administrative processes. Its structured reporting and review mechanisms also support institutional sustainability by improving continuity, accessibility, and organization of school records. These contributions are relevant to school heads, office heads, and teachers because the system facilitates online report monitoring, more efficient report preparation, safeguarding of records, and the use of generated information and visualizations to inform interventions. The study can also provide a basis for future research and further system development.

2. Material and methods

2.1 Research Design

The study used developmental and descriptive research designs. The developmental design guided the creation of the ADSS, while the descriptive design was used to evaluate users' perceptions of its performance through a structured survey questionnaire. The evaluation focused on user interface, data storage and retrieval, and report generation. System development followed the Agile System Development Life Cycle consisting of initiation, planning, development, release, and retirement. During initiation, problems involving delays and inconsistencies in manual reporting by the School Clinic, Guidance Office, and PIR/M&E were identified. Planning established the system's scope, users, functions, and technical and financial requirements. Development involved iterative creation and testing of office dashboards, report consolidation, approval and revision processes, and data visualization. During release, the system was deployed for use and evaluation. Retirement covered the eventual archiving or migration of stored records when the system is upgraded, replaced, or terminated. The development process also incorporated the existing manual and proposed digital data flows. In the manual process, teachers collected classroom data and submitted them to designated office heads, who consolidated the information and generated reports for school-head review. The resulting information supported decisions regarding learner interventions, monitoring, and reporting. In the ADSS, users access designated dashboards, office personnel enter and generate reports, and data are stored in respective office databases before consolidation into the General Database. The School Head may approve reports or return them for revision. Approved reports generate visualizations for identifying patterns and trends and can subsequently be downloaded, printed, and used for planning, decision-making, and record-keeping. The system development cost was Php 30,000.00, representing the agreed labor cost between the researcher and programmer; no additional supplies and materials were required because the project was purely computer-based. Development utilized a client device or desktop, Internet connectivity, HTML for webpage structure, CSS for interface styling, JavaScript for interactivity, Bootstrap for

responsive design, PHP for server-side processing, and MySQL for data storage and management. The development procedure covered preparation, system development, installation and deployment, testing and debugging, and report writing. The entire project was scheduled for 10 weeks, comprising one week for planning and designing, five weeks for development, one week for installation and deployment, two weeks for testing and debugging, and one week for report writing.

2.2 Locale of the Study

The study was conducted in five public high schools in Kibawe and Damulog, Bukidnon. The participating schools in Kibawe were Kibawe National High School-Poblacion Campus, Kibawe National High School-Main Campus, and Tumaras Integrated School, while those in Damulog were Old Damulog National High School and Macapari National High School. The location maps provided in the original manuscript identify the geographical locations of these five participating schools.

2.3 Respondents of the Study

The respondents consisted of 20 participants, comprising five school heads and fifteen office heads from the selected public high schools in Kibawe and Damulog, Bukidnon. The respondents were asked to navigate and operate the ADSS as part of its evaluation.

2.4 Sample and Sampling Procedure

The study employed purposive sampling to select participants with characteristics relevant to the project. Eligible respondents were public school principals currently assigned to the selected schools and teachers from the same schools holding ancillary designations as Guidance Designate, Clinic In-Charge, or Program Implementation Review/Monitoring and Evaluation (PIR/M&E) Designate.

2.5 Research Instrument

A structured survey questionnaire was used to evaluate the ADSS in terms of system performance and overall acceptability. System performance covered User Interface, Data Storage and Retrieval, and Report Generation. The User Interface component was adopted from the Post-Study System Usability Questionnaire (PSSUQ; Lewis, 1995) and assessed clarity, navigation, responsiveness, and overall interface satisfaction. The Data Storage and Retrieval and Report Generation components were researcher-made based on related literature on information system performance. System acceptability was evaluated using items adopted from validated technology acceptance and acceptability instruments, including TAM-based questionnaires (Davis, 1989) and the Service User Technology Acceptability Questionnaire (SUTAQ; Pais-Ribeiro et al., 2016). These assessed general acceptability, perceived usefulness, ease of use, trust, satisfaction, and behavioral intention to use the ADSS. Different Likert scales were retained according to the instrument used. User Interface was evaluated using a 7-point Likert scale, ranging from 7 (Strongly Agree), 6 (Agree), 5 (Somewhat Agree), 4 (Neutral), 3 (Somewhat Disagree), 2 (Disagree), to 1 (Strongly Disagree). Data Storage and Retrieval, Report Generation, and Acceptability used a 5-point Likert scale, ranging from 5 (Strongly Agree) to 1 (Strongly Disagree). These scales enabled quantitative assessment of the system's usability, functionality, and user-centered performance.

2.6 Data Gathering Procedure

The researcher prepared formal letters requesting permission from the concerned school heads to administer the instrument to the identified respondents. Following approval, consent forms were distributed to obtain respondents' permission and assure confidentiality of their identities. The researcher coordinated with the school heads regarding communication with the selected office heads and personally administered the questionnaires to provide clarification and facilitate immediate verification of responses. Completed questionnaires were retrieved, after which the collected data were tabulated, analyzed, and interpreted.

2.7 Data Analysis Techniques

The study used frequency count, percentage distribution, and mode to analyze the collected data. Frequency count determined the number of responses, percentage distribution represented the proportion of observations within each data point or grouping, and the mode identified the most frequently occurring response.

3. Results and Discussion

3.1 Design and Development of the Administration Digital Support System

3.1.1 ADSS Dashboards and User Functions

The developed ADSS provides role-specific access through a common login page. The Administrator dashboard manages user accounts and monitors reports across the participating schools. The Guidance Office dashboard supports bullying incident and child mapping reports, while the Clinic dashboard manages incident and Health and Nutrition/BMI records. The PIR/M&E dashboard handles Curriculum Management Support System (CMSS) reports. The School Head dashboard consolidates submitted reports and provides functions for approval or rejection, data visualization, printing, and downloading. The role-specific dashboard structure demonstrates how

the ADSS centralizes several administrative reporting functions while maintaining differentiated access according to user responsibilities. Office personnel manage their assigned reports, whereas School Heads review consolidated information and make approval decisions before finalized information is used for planning, documentation, and record-keeping.

3.1.2 System Workflow and Data Management

The ADSS operates independently across five schools. Guidance Office, Clinic, and PIR/M&E personnel log into their assigned dashboards, encode required information, and generate reports. Submitted records are initially stored according to office, after which the School Head reviews the consolidated reports. Declined reports are returned for correction and resubmission, while approved reports are consolidated, processed into data visualizations, and made available for downloading and printing. The Administrator maintains user accounts and monitors reports across the system. The system workflow establishes controlled access and a structured review process. Authentication, data encoding, report generation, consolidation, approval or rejection, visualization, and output generation are organized as interconnected processes. Approved information is stored in the School General database, while office staff are restricted to their respective data sources, supporting separation of responsibilities and administrative control.

3.1.3 Relational Database and System Requirements

The ADSS database is organized around the studentlist, branch, section, and users tables, which connect with records for student demographics, nutrition, enrollment, child mapping, CMSS, bullying and guidance incidents, and clinic incidents. Lookup and approval structures support consistent data organization and review, while separate approval processes are maintained for academic, health, nutrition, and other administrative records. The system operates through modern web browsers and requires an Internet-connected PC or laptop. The specified client device requires an Intel Core i3 or i5 processor (8th generation or higher) or AMD Ryzen 3 or 5, 4–8 GB DDR4 RAM, 128 GB SSD storage, and a minimum 1366 × 768 display. A minimum Internet speed of 20 Mbps download and 10 Mbps upload is required, while 50 Mbps or higher with latency of 50 ms or less is recommended. Dual-band wireless access and suitable network routing equipment support school connectivity.

3.2 System Performance of the Administration Digital Support System

3.2.1 User Interface

All five user-interface indicators obtained a mode of 7, corresponding to Highly Acceptable. Ease of use received the strongest response, with 18 respondents (90%) selecting Strongly Agree and 2 (10%) selecting Agree. Navigation received 80% Strongly Agree, while interface clarity and system responsiveness each received 75% Strongly Agree. Overall interface satisfaction had the lowest proportion of Strongly Agree responses at 70%, although it remained Highly Acceptable. The results indicate that users generally found the ADSS intuitive, understandable, responsive, and easy to navigate. The strong rating for ease of use supports Davis's (1989) Technology Acceptance Model (TAM), which emphasizes perceived ease of use as an important influence on user satisfaction and technology acceptance. The favorable assessment of navigation and interface design is also consistent with findings that administrators and school personnel are more satisfied with simple and user-friendly systems (Liday & Agapito, 2020; Acala & Talirongan, 2023).

3.2.2 Data Storage and Retrieval

All five data storage and retrieval indicators obtained a mode of 5 and were rated Highly Acceptable. Ease of data retrieval received the highest response, with 18 respondents (90%) selecting Strongly Agree and 2 (10%) selecting Agree. Up-to-date data retrieval and protection from unauthorized access each received 85% Strongly Agree, while completeness of stored information received 80%. Data accuracy received 75% Strongly Agree, 20% Agree, and 5% Neutral, making it the lowest-rated indicator while remaining Highly Acceptable. These findings indicate strong user confidence in the system's ability to store, protect, and retrieve administrative information. Easy retrieval can reduce time spent searching manually for institutional records, consistent with Sharma and Chandel (2013), who identified efficient data retrieval as an important feature of institutional information systems. The high ratings for current information and data protection further indicate confidence in the system's reliability and security. However, the comparatively lower rating for data accuracy suggests an area where continued attention may be needed because errors in stored information can affect reports and administrative decisions.

3.2.3 Report Generation

All five report-generation indicators achieved a mode of 5 and were rated Highly Acceptable. Report clarity received the strongest evaluation, with 19 respondents (95%) selecting Strongly Agree and 1 (5%) selecting Agree. Downloadable and printable reports were also rated highly, followed by report format consistency and usefulness, each receiving 85% Strongly Agree. Report completeness received 75% Strongly Agree and 25% Agree, representing the lowest rating in this dimension while still remaining Highly Acceptable. The findings show that users valued clear, usable, and accessible system-generated reports. The strong assessment of report clarity is consistent with DeLone and McLean's (2003) Information Systems Success Model, which identifies information quality, including clarity and readability, as contributing to system satisfaction. Downloadable and

printable outputs also support documentation and record-keeping, while consistent and useful reports correspond with factors associated with information-system satisfaction identified by Al-Fraihat et al. (2020). Although report completeness remained Highly Acceptable, its comparatively lower rating suggests potential for further improvement in the depth and coverage of generated reports.

3.3 Acceptability of the Administration Digital Support System

All eight acceptability indicators obtained a mode of 5 and were rated Highly Acceptable. Perceived task accuracy received the highest rating, with 18 respondents (90%) selecting Strongly Agree and 2 (10%) selecting Agree. Task efficiency received 85% Strongly Agree, while daily administrative acceptability, improvement over previous methods, and willingness to recommend the system each received 80%. Intention for future use and ease of learning each received 75% Strongly Agree. Enhancement of overall work performance received the lowest proportion of Strongly Agree responses at 70%, with the remaining 30% selecting Agree. No neutral or negative responses were recorded for the eight indicators. The results indicate that users considered the ADSS acceptable, useful, accurate, and effective for administrative work. The strong rating for task accuracy is consistent with Hidayah et al. (2021), who stated that perceived accuracy significantly affects user trust and system acceptability. Positive ratings for efficiency, ease of learning, and continued use are also consistent with Davis (1989) Technology Acceptance Model, in which behavioral intention is significantly predicted by perceived ease of use. Although overall work-performance enhancement received the lowest proportion of Strongly Agree responses, all respondents still selected either Strongly Agree or Agree, indicating positive acceptance while identifying an area in which the system's contribution to productivity could be further enhanced.

4. Conclusion & Recommendations

The Administration Digital Support System (ADSS) was successfully developed as a web-based platform that enables designated office staff to encode and submit administrative reports, while School Heads review, approve, or decline submissions through assigned dashboards. Approved reports are consolidated, visualized, and made available for downloading and printing. The system was rated Highly Acceptable in terms of user interface, data storage and retrieval, report generation, and overall acceptability across the five participating schools, indicating that it performed well in the evaluated areas and was considered suitable for routine administrative tasks.

The ADSS may be further improved by standardizing report formats according to DepEd requirements, enhancing report content based on user needs, developing offline data entry and access with automatic synchronization upon reconnection, expanding the range of administrative reports, and strengthening system security through appropriate firewall and security mechanisms. Continuous user feedback and further evaluation of system efficiency, security, and user adoption are also recommended. The system may also be scaled using the same web address to accommodate broader educational organizations, including Districts and Schools Division Offices, within a secure and role-defined platform.

The study was limited to the development and evaluation of the web-based ADSS among teachers and School Heads from five selected public high schools in the municipalities of Kibawe and Damulog. The system covered BMI, incident, bullying, child mapping, and CMSS reports and required internet-enabled devices, updated web browsers, and a stable network connection for operation. An offline version, additional administrative report types, and implementation in broader educational organizations such as Districts and Schools Division Offices were not included in the current study.

5. Compliance with ethical standards

The authors declare no conflict of interest. This study received no external funding. The researchers acknowledge the teachers and school heads of the selected public high schools in Kibawe and Damulog, Bukidnon, for their participation and institutional support. Participation was voluntary, informed consent was obtained, and data were collected through non-invasive methods while maintaining confidentiality and ensuring that no identifying information was disclosed.

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