



Design and Development of an Alumnae Association Management System

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Abstract:

Alumnae associations provide an important connection between educational institutions with their former students. Such associations support communication record maintenance contribution activities professional contact institutional engagement alumnae participation. As the number of former students increases the management of personal academic professional contribution payment information becomes difficult through conventional record keeping methods. Paper records spreadsheets separate files may contain outdated information duplicate entries incomplete details. Manual retrieval of information may require additional time. Manual contribution management may also create difficulties during payment verification record updating report preparation. This paper presents the design development of a web-based Alumnae Association Management System intended for centralized management of alumnae information association activities. The proposed system provides facilities for alumnae registration academic record management professional record management contribution submission payment detail management payment verification administrative record management report generation audit logging. The system supports a structured method for collecting storing updating retrieving alumnae information through a single platform. Alumnae can provide required information through registration facilities. Academic professional information can be maintained as organized records. Contribution information can be submitted through the portal. Payment details can be maintained for administrative verification. Administrators can review records manage contribution information verify submitted payment details filter required information prepare reports monitor important activities. The system is designed to reduce dependence on manual record keeping while improving accessibility organization consistency of alumnae information. The proposed system can support efficient administration by providing a centralized source for alumnae related records. Audit logging provides a record of important administrative activities which can support accountability during system operation. The system provides a practical foundation for future improvements such as event management automated notifications, online payment facilities, mobile access communication features enhanced reporting. The proposed approach demonstrates how a dedicated web-based management system can support organized alumnae association activities through centralized information management.

Keywords: Alumnae Management, Web-Based Portal, Alumnae Registration, Academic Records, Professional Records, Contribution Management, Audit Logging.

1. INTRODUCTION

The growth of web technologies has provided educational institutions with new ways to maintain records and communicate with their former students. An alumnae association acts as an important link between an institution and

its alumnae by supporting communication, maintaining updated information, encouraging participation and managing contributions and association activities. In a conventional environment, alumnae information may be collected through forms and maintained in paper files, spreadsheets, or separate records. Academic and professional information may also be stored independently from contribution and payment information. As the number of alumnae increases, maintaining these records manually can become difficult and time-consuming. A centralized web-based system can provide a structured approach for collecting and maintaining alumnae information. It can allow alumnae to register their details, maintain academic and professional information, submit contribution details and provide payment information through a common platform. Administrators can manage records, verify payments, filter information, generate reports and monitor important activities. The objective of this study is to design and develop an Alumnae Association Management System that provides a centralized and organized platform for managing alumnae records, contributions, payments, reports and administrative activities.

2. EXISTING SYSTEM

In many institutions, alumnae information is maintained using conventional methods such as paper-based records, spreadsheets and manually maintained files. Registration may require physical forms or separate communication with the institution. Updating information can also depend on manual collection of revised details from alumnae. Contribution management is another area where manual methods may create difficulties. Contribution information and payment details may be maintained separately, making verification and tracking more difficult. Preparing reports may require searching multiple files and combining information manually. Traditional methods can also make it difficult to maintain a consistent history of administrative activities. When information is distributed across different records, retrieving particular alumnae details, filtering records and maintaining updated information may require additional effort. Therefore, a centralized system is required to organize alumnae information, education records, contributions, payment verification, report generation and administrative activity tracking.

3. PROPOSED SYSTEM

The proposed Alumnae Association Management System is a web-based platform designed to centralize the management of alumnae information and association activities. The system provides a structured environment for maintaining alumnae records in an organized manner. It is intended to reduce the dependence on paper records spreadsheets and separate files while providing easier access to updated information. The system supports two main user perspectives namely ALUMNAE and ADMINISTRATOR.

Alumnae can register through the portal and submit personal academic and professional information. The registration facility provides a convenient method for collecting required alumnae details in a structured form. Academic information can be maintained as education records while professional information can be associated with the corresponding alumnae record. This helps maintain complete information that can be used for future reference and administrative activities.

The system also provides facilities for contribution management. Alumnae can submit contribution information through the portal and provide the required payment details. Contribution information is maintained separately from payment information so that contribution records and payment records can be managed systematically. The payment details can be reviewed by the administrator for verification before the contribution information is considered complete.

The administrator can manage alumnae information and review the records maintained through the portal. Administrative activities include reviewing alumnae details managing contribution records verifying payment details filtering records according to required criteria and generating Excel reports. The administrator can also maintain an audit log of important activities performed during system management. This provides a record of administrative operations and supports better monitoring of system activities.

The proposed system includes three major functional areas namely Alumnae Registration Contribution Management and Administration. Alumnae Registration focuses on collecting and maintaining personal academic and professional information. Contribution Management focuses on contribution details and payment information. Administration focuses on record management payment verification report generation and audit monitoring.

The system maintains separate logical records for different categories of information. The Alumnae Database contains the main alumnae information. Education Records maintain academic details. Contribution Records store

contribution-related information. Contribution Payment Records maintain payment details and verification information. The Audit Log maintains records of important administrative activities.

The centralized approach allows alumnae information to be maintained in an organized manner within a single platform. It can reduce repetitive manual record handling and make information retrieval easier for administrative users. The structured maintenance of records also supports report preparation and future expansion of the system.

The proposed system provides a practical platform for managing alumnae association information and activities. Future improvements can include event management automated notifications online payment facilities mobile access enhanced communication features and advanced reporting facilities. These improvements can further extend the usefulness of the system while maintaining centralized management of alumnae records. The proposed system is represented by three major processes: Alumnae Registration, Contribution Management and Administration. The major data stores are Alumnae Database, Education Records, Contribution Records, Contribution Payment Records and Audit Log. The proposed system can



Figure 1

4. METHODOLOGY

4.1. ALUMNAE REGISTRATION

The registration module allows alumnae to provide their required information through the online portal. The information may include personal details along with academic and professional information. The submitted information is stored in the appropriate database records for future access and management. The registration process reduces the need for manual data collection and provides a structured method for maintaining alumnae information.

4.2. EDUCATION AND PROFESSIONAL RECORDS

The system maintains academic and professional information provided by the alumnae. Education-related information is stored as education records so that it can be accessed and managed systematically. The maintained information can help the association organize alumnae records and retrieve relevant information when required.

4.3. CONTRIBUTION MANAGEMENT

The contribution management module allows alumnae to submit contribution-related information through the portal. Contribution details are maintained in the Contribution Records data store. The system also maintains payment-related information separately, allowing contribution details and their associated payment information to be organized systematically.

4.4. PAYMENT VERIFICATION

Payment details submitted by alumnae are maintained in the Contribution Payment Records. The administrator can review the submitted payment information and perform the required verification. Payment verification helps the administrator maintain accurate contribution records and distinguish verified contribution payments from submitted information that is still under review.

4.5. ADMINISTRATION

The administration module provides functions required for managing the overall alumnae association system. The administrator can manage alumnae records, review contribution information, verify payments, filter records and generate reports. The administrator can also monitor important system activities through the audit log.

4.6. REPORT GENERATION

The system provides filtering facilities that allow administrators to retrieve required alumnae or contribution information based on relevant criteria. The filtered information can be used to generate reports in Excel format. This reduces the manual effort required for preparing reports and makes the stored information easier to analyze and manage.

4.7. AUDIT LOGGING

The system maintains an Audit Log to record important administrative activities. Audit logging provides a history of relevant actions performed within the system. Maintaining an audit log improves accountability and helps administrators track changes and important activities associated with system management.

4.3. TECHNOLOGY STACK

The is developed using a modern web-based technology stack. The application uses JavaScript as the programming language with Next.js and React for frontend development. Tailwind CSS is used for designing the user interface. Next.js is also used for backend development. Supabase PostgreSQL is used for database management while Prisma is used as the Object Relational Mapper. Supabase Auth is used for authentication and access management. Supabase Storage is used for storing required files. React Hook Form is used for handling application forms while Zod is used for input validation. The system is developed and tested using the Windows 11 operating system.

Software Configuration

Component	Technology Used
Operating System	Windows 11
Programming Language	JavaScript
Front End	Next.js, React, Tailwind CSS
Back End	Next.js
Database	Supabase PostgreSQL
ORM	Prisma
Authentication	Supabase Auth
File Storage	Supabase Storage
Form Handling	React Hook Form

Component	Technology Used
Validation	Zod

5. SYSTEM IMPLEMENTATION

The proposed Alumnae Association Management System is implemented as a web-based management portal for managing alumnae information and association activities. The system provides separate facilities for alumnae and administrators. Alumnae can register through the portal and submit personal academic and professional information. The collected information is maintained in structured records for future access and management.

The system also provides contribution management facilities. Alumnae can submit contribution information and provide payment details through the portal. Contribution and payment information are maintained systematically so that administrators can review the submitted details and perform payment verification when required.

The administrator interface provides facilities for managing alumnae records reviewing contribution information verifying payment details filtering records and generating Excel reports. An audit log is also maintained to record important administrative activities. These facilities help reduce manual record handling and make information retrieval and report preparation easier.

The database maintains separate categories for alumnae education contribution payment and audit information. This organization supports consistent storage and retrieval of records and provides a suitable foundation for future expansion.

Overall, the implementation provides a centralized platform for alumnae registration record management contribution management payment verification report generation and administrative monitoring. The system can support routine alumnae association activities while reducing dependence on paper records spreadsheets and separate files.

6. RESULTS AND DISCUSSION

The proposed system provides a centralized approach for managing alumnae association information. The implementation provides a structured method for collecting and maintaining alumnae records instead of depending completely on paper documents and separate files. This can improve the organization of information and make required records easier to retrieve.

The registration facility provides a systematic method for collecting personal information from alumnae. The use of structured registration fields can help maintain information in a consistent format. Academic information can also be maintained as organized education records. This provides a useful source of information when academic details are required for administrative activities or future reference.

Professional information provides additional details about the background of alumnae. Maintaining professional records can help the association understand the professional information available within its alumnae database. Such information can also provide a foundation for future communication, networking and association activities.

The contribution management facility provides an organized method for recording contributions. The system allows contribution information to be maintained in a structured manner while payment information can be stored separately. This separation helps administrators review payment-related information without depending on manually maintained documents.

Payment verification is an important administrative function of the system. The administrator can review submitted payment details and maintain the appropriate verification information. This provides a more organized method for handling contribution payments and can reduce the difficulty involved in manually checking separate payment records.

The report generation facility provides another important result of the proposed system. Administrators can filter records according to required criteria and generate Excel reports. This reduces the need to search through multiple files and manually combine information. The availability of organized reports can support routine administrative activities and provide useful information for record maintenance.

The audit logging facility provides a history of important administrative activities. Recording relevant activities can help administrators review previous operations when required. It also provides a structured record of important administrative actions and can support accountability during system operation.

The centralized nature of the proposed system can reduce repetitive manual work. In a conventional environment, an administrator may need to search through paper records or multiple spreadsheets to locate particular information. The proposed system provides a common platform where required information can be retrieved from organized records.

The system can also improve the consistency of information management. When records are maintained through a structured platform, the possibility of maintaining the same information in multiple separate locations can be reduced. Updated information can be managed within the centralized database which can support more reliable retrieval.

The results indicate that the proposed system can support the major activities required for alumnae association management. These include alumnae registration, academic and professional record maintenance, contribution management, payment verification, administrative record management, report generation and activity monitoring.

7. FUTURE ENHANCEMENTS

The proposed Alumnae Association Management System can be enhanced in the future by introducing additional features to improve its functionality and usability. These improvements can help the institution manage alumnae information more effectively and strengthen communication between the institution and its alumnae.

The system can be extended to support mobile devices through a dedicated mobile application or an improved mobile-friendly interface. This would allow alumnae to access the portal conveniently and update their personal academic and professional information using their mobile devices.

Automated notifications can be introduced to inform alumnae about important announcements registration updates contribution status and upcoming events. Email notifications or other suitable notification services could improve communication and reduce the need for manual follow-up.

An event management feature can be developed to manage alumnae meetings reunions workshops and other institutional activities. It could provide event details registration facilities and participation records. This would help the association organize events and maintain information about alumnae participation.

Alumnae networking and communication features could be developed to help alumnae connect with former classmates share professional experiences and exchange career-related information. A communication module could also support announcements and interaction between the institution administrators and registered alumnae.

A dashboard with analytical features could be introduced to display summarized information about alumnae registrations contribution records payment status and event participation. These reports could help administrators understand participation trends and support future planning.

Future versions of the system could include improved security measures such as enhanced access controls regular security monitoring and stronger account protection. Automated database backups and recovery facilities could also be introduced to protect stored information and support reliable system operation.

8. AUTHOR CONTRIBUTION

The author contributed to the requirement analysis and development of Design and Development of an Alumnae Association Management System. The author worked on database design technology selection testing and documentation.

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