Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College – Apalit, Pampanga

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CHAPTER 1: INTRODUCTION

Evaluating school and program events is an integral process that contributes to an institution's success and continuous development. At La Verdad Christian College - Apalit, Pampanga, club activities, extracurricular programs, and school-wide events are essential for promoting student engagement, collaboration, and learning. A comprehensive assessment of these activities is crucial to emphasize strengths, identify weaknesses, and ensure alignment with institutional goals.

The Prefect of the Student Affairs and Services (PSAS) Department oversees student-related event evaluations, often encountering challenges such as low response rates attributed to delayed survey completions and a lack of automated follow-ups. The department predominantly employs fundamental survey instruments such as Google Forms. Although sufficient for preliminary data collection, these tools cannot efficiently classify and extract actionable insights from qualitative feedback, necessitating laborious manual analysis. Given that students constitute the primary source of data for event evaluation by completing evaluation forms, their insights are essential in shaping future institutional enhancements. Recognizing their unique perspectives is essential for facilitating meaningful improvements.

This capstone project, titled "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports", aims to address the challenges associated with the existing event evaluation process at La Verdad Christian College - Apalit, Pampanga. The project seeks to create a systematic and standardized platform for event evaluation, streamlining feedback collection, organization, and analysis to provide actionable insights that improve event quality and institutional impact.

A. Background of the Study

Historically, events have traditionally served as essential instruments for fostering collective experiences, transitioning from initial communal assemblies into carefully orchestrated activities vital for promoting educational objectives through learning and social interaction. In educational institutions, events are an important tool for enriching the traditional curriculum by providing students with opportunities for personal growth, communication, collaboration, and learning. As Trimble (2024) asserts, "Campus events are more than just social gatherings; they are integral to creating a vibrant campus culture that supports student success." This perspective underscores the growing recognition of events as mechanisms for enhancing experiences and fostering engagement, collaboration, and diverse skill development (Getz & Page, 2019b).

To ensure the continued effectiveness of these valuable events, it becomes imperative to establish a structured and systematic evaluation methodology. Such a methodology will rigorously assess attendee satisfaction, precisely determine areas necessitating improvement, and identify existing strengths (Shone & Parry, 2019). Conversely, the absence of practical evaluation tools consistently hinders institutions from seizing opportunities to refine program quality and strengthen overall event efficacy.

Event evaluation typically relies on surveys and questionnaires, administered in either paper-based or electronic formats, to collect comprehensive feedback. However, numerous institutions frequently encounter considerable challenges in efficiently organizing, rigorously analyzing, and accurately interpreting these survey responses. Bowdin et al. (2023) have notably observed that the collection and subsequent evaluation of manual feedback often lead to significant inefficiencies, including pervasive data inconsistencies, extended processing durations, and inherent difficulties in

interpreting nuanced qualitative remarks. Collectively, these inefficiencies critically hinder the prompt acquisition of valuable insights, thereby postponing essential enhancements.

At La Verdad Christian College - Apalit, Pampanga, a diverse range of school and program-related events are regularly organized by the management, students, faculty, and program-specific club organizations. The Prefect of Student Affairs and Services (PSAS) Department specifically supervises assessments of student activities, primarily employing digital surveys through platforms like Google Forms. Despite the availability of such digital tools, the consolidation and synthesis of relevant insights continue to be primarily manual. This inherent limitation hinders the thorough understanding obtainable from the data, including quantitative evaluations. It directly leads to inefficiencies due to the notable lack of a standardized framework for collecting and analyzing feedback.

While contemporary research (Shone & Parry, 2019; Bowdin et al., 2023) universally emphasizes the critical need for event evaluation, most focus primarily on large-scale or industry-specific events. As a result, academic evaluation methods often lack the technological tools needed to meet today's institutional requirements. While Google Forms effectively enables digital data collection, its fundamental capabilities do not encompass extensive data analysis or the systematic derivation of significant insights. Consequently, empirical research on event assessment in educational environments is significantly constrained in exploring how advanced technological systems can enhance evaluation despite the prevalence of manual processing.

Recognizing these challenges, there exists a pressing need for a streamlined event evaluation system that improves the processes of feedback gathering, organization, and analysis. The proposed system is designed to incorporate several features that aim to enhance efficiency and user experience

including authentication for secure role-based access, notifications to guarantee the prompt initiation and conclusion of surveys, optimized survey creation with upload compatibility for increased flexibility, interactive and engaging feedback mechanisms, automated processing of gathered data, and performance reporting through visualizations (e.g., charts, graphs) providing insights into event performance by employing organized feedback to deliver actionable recommendations. Furthermore, a data storage feature will ensure that historical data is readily accessible for future reference and extensive analysis. By adopting this approach, La Verdad Christian College - Apalit, Pampanga, can significantly enhance its event evaluation framework, enable prompt decision-making, and stimulate continuous improvement in the quality and impact of its events.

B. Technical Background

This section defines the current process of event evaluation and feedback collection at La Verdad Christian College - Apalit, Pampanga. It outlines the manual process, the technologies and tools currently used, and the entities involved. This background establishes the context for the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports," which aims to address the identified inefficiencies.

Background of the Current Process

- The current process of event evaluation at La Verdad Christian College - Apalit, Pampanga, remains manual despite using basic web technologies such as Google Forms. Although the use of these methods **meets** the basic data collection requirements, the inefficiencies of sorting, categorizing, and analyzing the feedback limit the institution's ability to make data-driven decisions that are beneficial for future events.
- For club-led events and activities, the evaluation process is independently managed by Program-Specific Club Officers. They are responsible for creating surveys, distributing them to participants, and collecting feedback. The results of these evaluations are communicated directly to the Program Heads for review and further action. These activities operate outside of the PSAS-managed framework.

Event Evaluation Manual Process Tools and Technologies

This section details the existing hardware and software tools that support the current event evaluation process.

- **Computers, Laptops, Tablets, Phones:** These devices are utilized by PSAS Department Staff and Program-Specific Club Officers for survey creation and distribution, and by students for completing feedback forms.
- **Google Forms:** Serves as the primary tool for survey creation and data collection for both PSAS-managed and Club-managed evaluations.

This section identifies the key individuals or groups involved in the current event evaluation process.

- **PSAS Department:** Responsible for the creation of evaluation forms, feedback collection, manual analysis of responses, and generating summary reports for Senior Management.
- **Assistant Principal:** Facilitates the routing of survey links to instructors or class advisers for dissemination to students, particularly in the Basic Education Department.
- **Program Heads:** Manage survey distribution for their corresponding programs, particularly in the Higher Education Department. They also receive evaluation results from program-specific club-led activities.
- **Club Officers / Event Organizers:** Independently handle the evaluation process for club-led activities, including survey creation, distribution, feedback collection, and communication of results to Program Heads.
- **Participants:** Individuals who provide feedback through surveys for both PSAS-managed and club-led events.
- **Senior Management:** Review evaluation reports.

Event Evaluation Manual Process Overview and Diagrams

The current manual process starts with either the PSAS Department or Program-Specific Club Officers developing tailored evaluation forms on Google Forms for each specific event. These forms are then distributed through distinct channels: Assistant Principals and Program Heads route them to instructors then to the students for PSAS-managed events, whereas Program-Specific Club Officers directly disseminate them for club-led activities. Participants complete the surveys, and Google Forms serves as the collection point for responses.

Figure 1.1 provides a high-level overview of this multi-faceted current process for event evaluation at La Verdad Christian College. It presents the separate initiation points for PSAS-managed and Club-led events, tracing the flow from form creation and distribution to data collection, analysis, and reporting across various stakeholders.

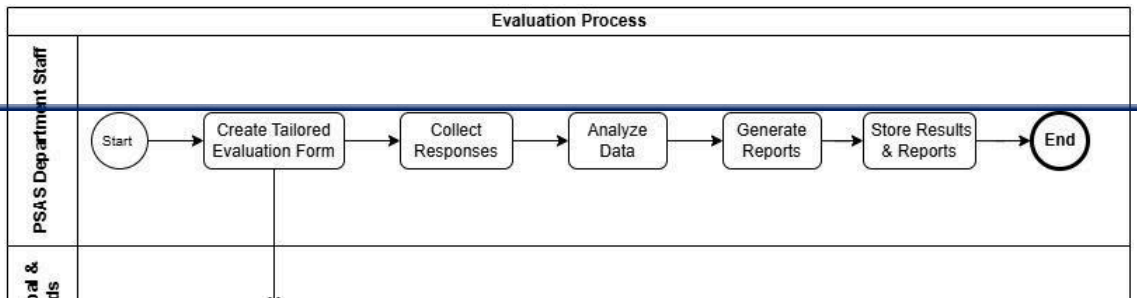


Figure 1.1: Overview of the Current Process for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

To further elaborate on the components and interactions within this manual system, **Figure 1.2** illustrates its overarching system architecture. This architecture highlights the various user devices, the central role of Google Forms as an external service for data collection, and the subsequent manual processes involved in data analysis and reporting before storage and review by management.

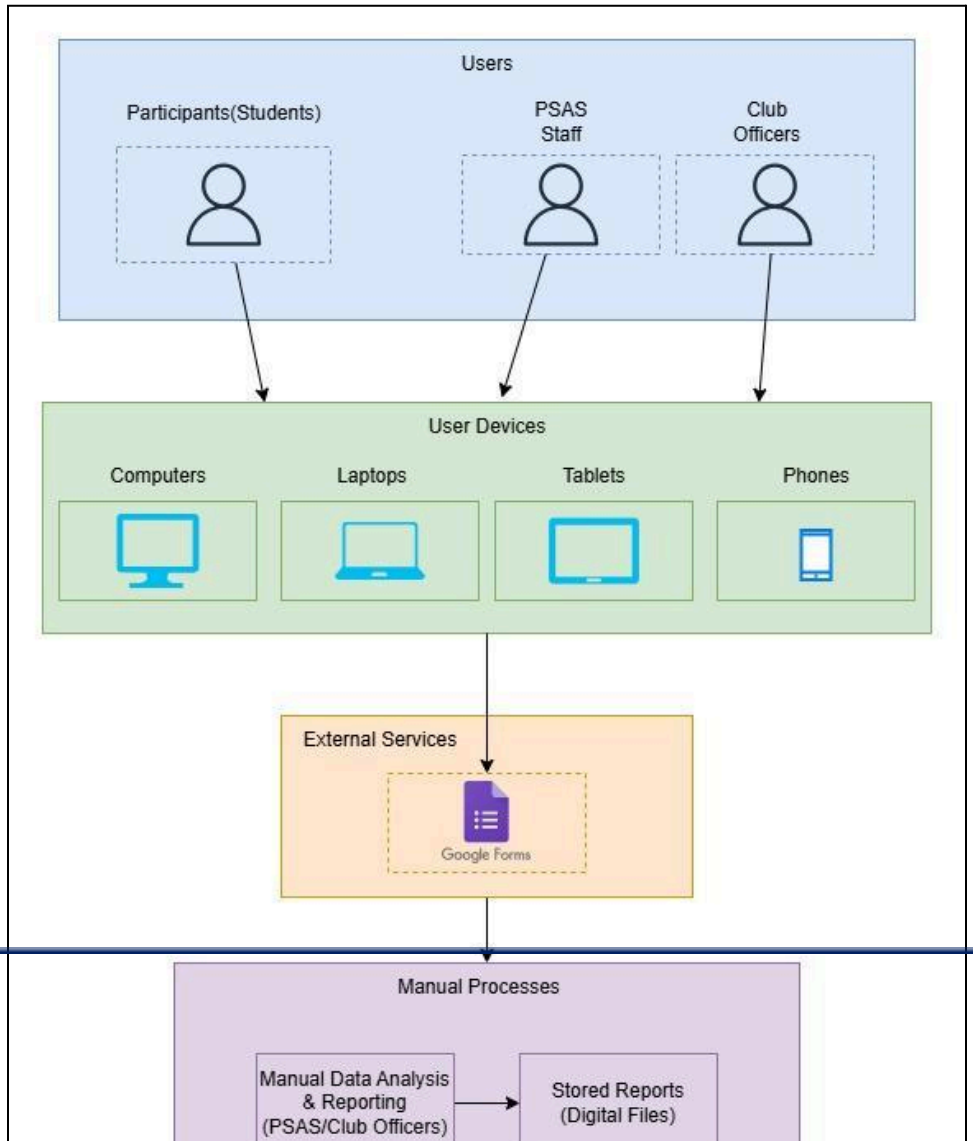


Figure 1.2: System Architecture of the Current Process for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

Following collection, data compilation and analysis are performed manually, with separate workflows for each party. **Figure 1.3** details the data flow within this current process, from form creation and survey responses, through data collection via Google Forms, to the subsequent stages of analysis and report generation before reaching senior management and program heads. For PSAS-managed events, PSAS Department Staff meticulously process structured ratings and written comments, manually segmenting qualitative feedback to identify trends. Conversely, for club-led activities, Program-Specific Club Officers independently compile and analyze their feedback. Once analysis is complete, reports are generated; PSAS formats reports for Senior Management, while Program Heads review those from club events. All results and reports are subsequently stored for future reference.

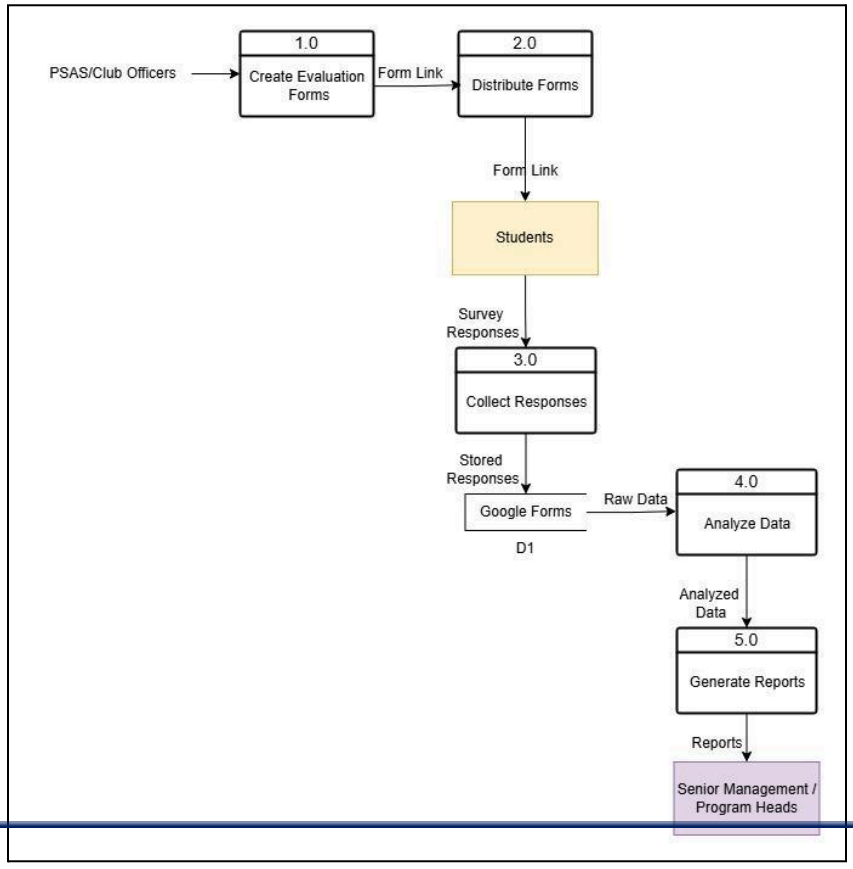


Figure 1.3: Data Flow Diagram of the Current Process for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

The underlying structure of the data involved in this manual process is represented in the entity relationships shown in **Figure 1.4**. This diagram identifies the key entities such as events, users, survey responses, and reports, illustrating how information is conceptually organized and linked within the current framework.

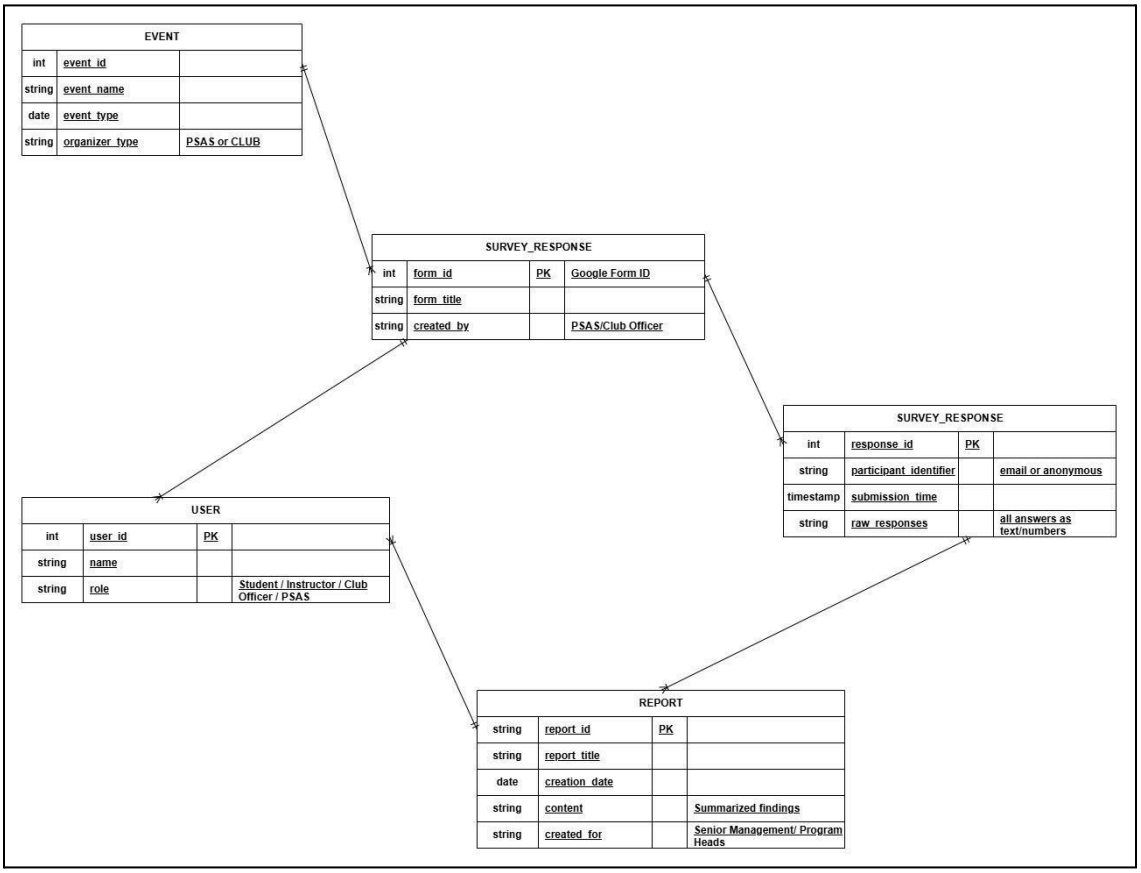


Figure 1.4: Entity Relationship Diagram of the Current Process for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

Furthermore, the interactions between the various stakeholders and the system's functionalities within the current evaluation process are depicted in the Use Case Diagram in **Figure 1.5**. This diagram visually outlines the roles of PSAS Staff, Club Officers, Assistant Principals, Senior Management, Program Heads, and Students, showcasing their participation in activities such as creating forms, distributing surveys, collecting and analyzing responses, and reviewing reports.

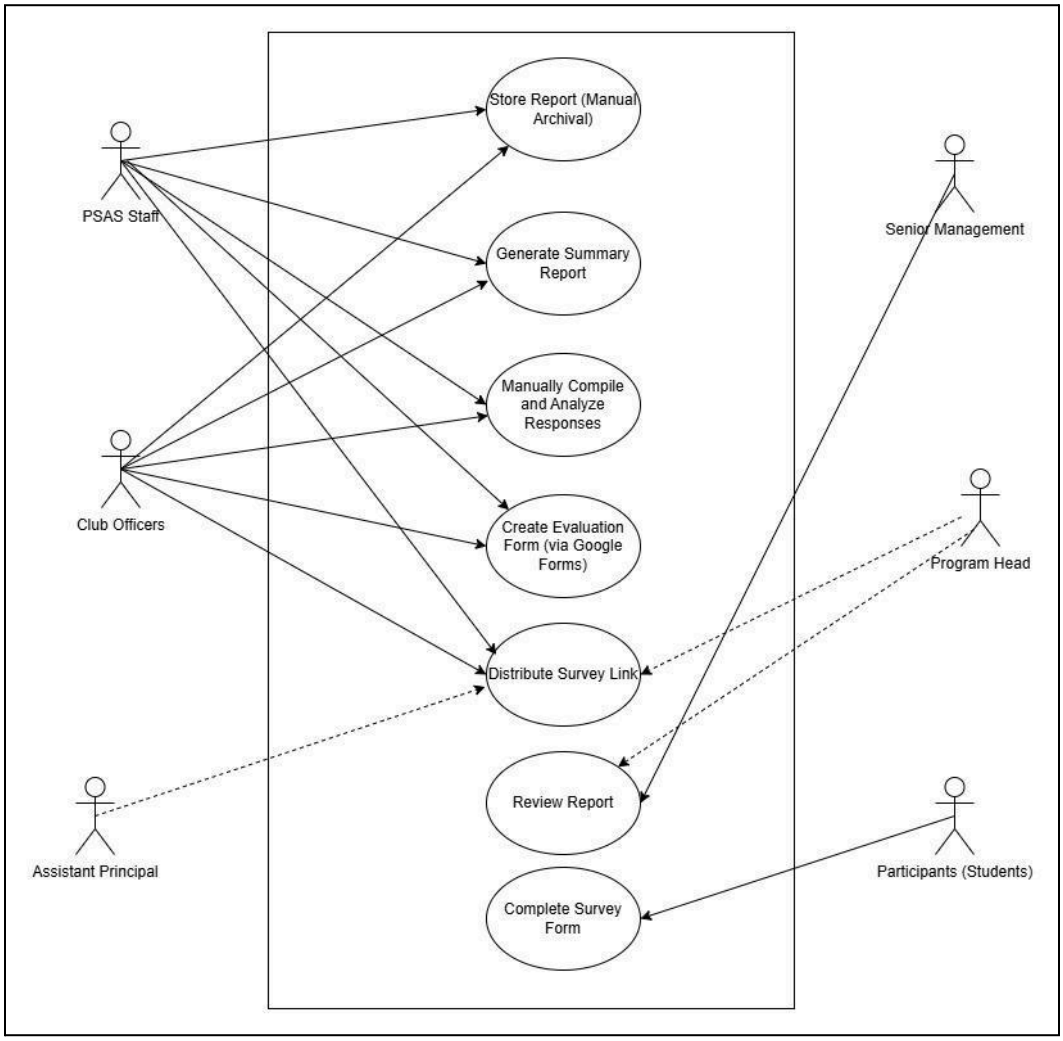


Figure 1.5: Use Case Diagram of the Current Process for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

Proposed Solution

This section presents the architecture, components, and technical specifications of the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports," detailing how it will address the limitations of the current manual processes.

Proposed System Overview

In response to the challenges of the current process, the proposed system aims to provide a solution that enables stakeholders to make informed decisions based on actionable insights. Designed as a web-based application, the system ensures seamless accessibility across various devices, including computers, tablets, and smartphones, through browser-based functionality. Built with an API-first approach, the system promotes modularity and offers the flexibility for seamless integration with existing or future institutional systems, regardless of their underlying technology.

The overall system architecture, demonstrating the interconnections of its key components and technologies, is presented in **Figure 1.6.** This diagram illustrates the client-server relationship (Frontend and Backend), the API layer for backend logic and data processing (including Node.js and Python integration), and a comprehensive user management system that handles user registration, authentication (Google SSO, JWT, and robust role-based access control), data storage (MongoDB, MongoDB Atlas), and deployment (Vercel, Render). This robust architecture is foundational to enabling the system's comprehensive features.

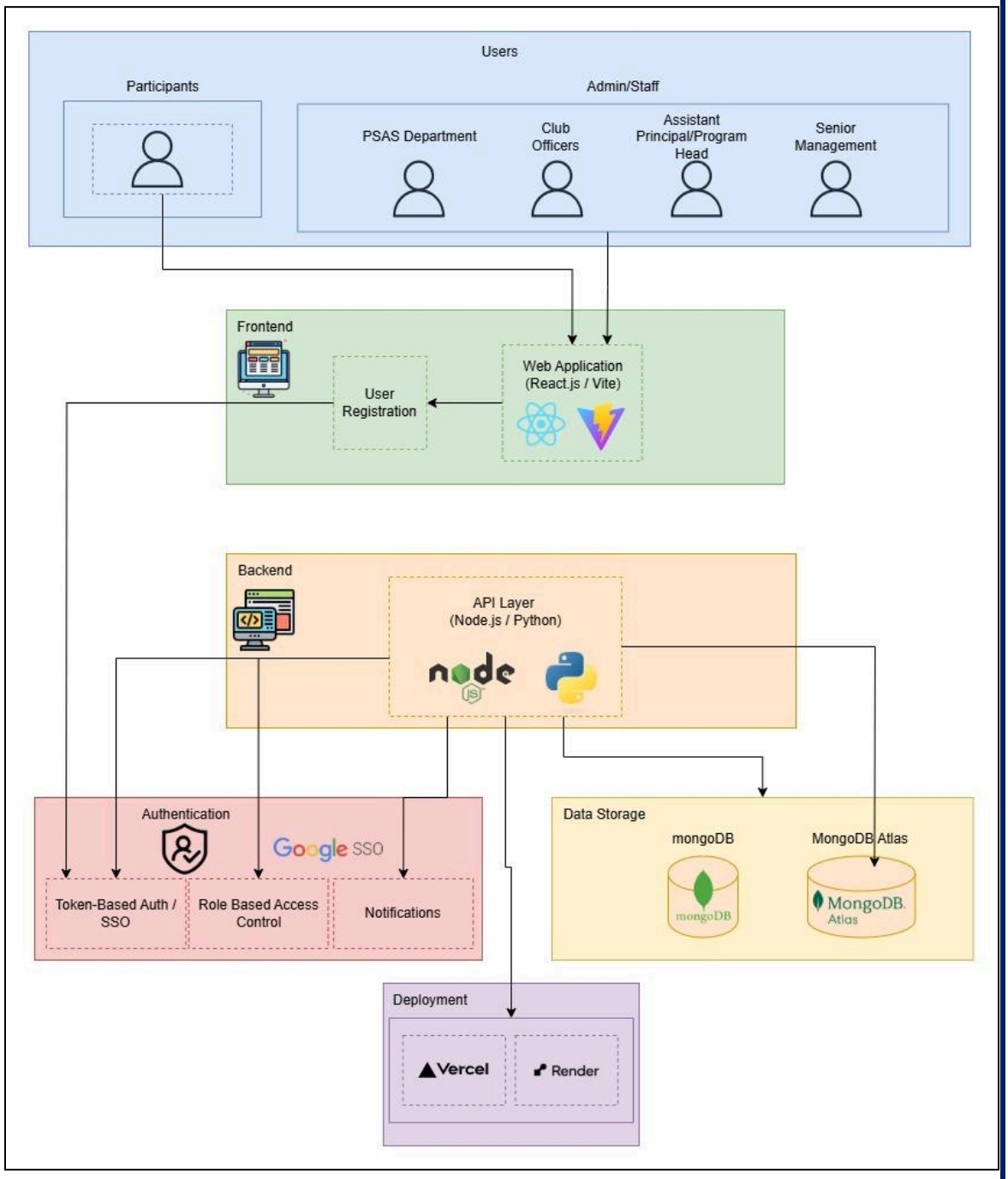


Figure 1.6: System Architecture of the Proposed System for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

Proposed System Architecture and Features

The proposed system will be built with a robust architecture and will comprise several key features to enhance the event evaluation process.

- **User Registration & Profile Management:** Facilitates the secure creation of new user accounts, capturing necessary profile information (such as year level) and linking to Google SSO where it is applicable, allowing for comprehensive user management beyond basic authentication. The system will be designed to automatically update registered students' year levels at the start of each academic year through integrated academic data synchronization, ensuring their profiles remain current without manual intervention.

- **User Onboarding:** Provides guided tours, contextual help, and initial setup wizards to familiarize new users with system functionalities and ensure a smooth and efficient start.

- **Authentication:** Ensures secure system access for authorized individuals using OAuth 2.0 for Single Sign-On (SSO) via Google credentials, JWT-based session management, and HTTPS for data encryption during transmission.

- **Notifications:** Automates reminders and updates to stakeholders, ensuring surveys are created and completed on time, primarily through automated email distribution facilitated by Nodemailer.

- **Role-Based Access Control (RBAC):** Defines user permissions to align features with specific roles. Role and permission data will be securely managed within MongoDB, with access validated through Node.js Middleware for secure system interactions.

PSAS Department	**Process Administrative Access**	Access to create surveys, analyze data, and manage archives.
Program - Specific Club Officers	**Program - Specific Administrative Access**	Authorized to create surveys and review event-specific responses solely for the events they manage.
Participants	**Submission Only Access**	Respond to surveys without accessing other system functionalities.
School Administrators (Assistant Principals / Program Heads / Senior Management):	**Reviewer / Read Access**	Permitted to view and analyze surveys and results relevant to their specific responsibilities and institutional oversight.
MIS Department / Developers / IT Support	**Technical / System Administrative Access**	Responsible for overall system maintenance, technical configurations, and ensuring the system's operational health and support.

- **Survey Creation:** Allows authorized users to create custom evaluation surveys using React.js for a responsive and intuitive interface, with all survey data securely managed and stored in MongoDB.

- **Hierarchical Event Evaluation:** Enables the creation of nested surveys or sub-evaluations for specific components or sessions within a larger event, allowing for detailed feedback collection while maintaining an overarching event evaluation structure.

- **Survey Upload (Flexibility):** Integrates existing surveys (e.g., from Google Forms) or collected responses through CSV file uploads. Python's Pandas library will be leveraged to process and validate the uploaded answers, which Node.js APIs will then integrate into the MongoDB database.

- **Participant Eligibility & Attendance Management:** To ensure feedback is collected only from actual event participants and to minimize manual intervention, the system will incorporate eligibility verification. Authorized personnel (e.g., Program-Specific Club Officers or PSAS Department) will upload a batch CSV file of confirmed attendees for each event. The system will then use this list to grant survey access exclusively to eligible students, preventing absent students from completing evaluations.

- **Interactive and Engaging Feedback Mechanisms:** Improves participation with gamified elements (such as digital badges) and visualizations, developed using React.js and Tailwind CSS for a dynamic user experience. All participants will receive automated certificates upon completion.

- For Basic Education students, additional system-based recognition will include awarding digital badges that are fun, visually appealing, and suitable for their age group.
- For Higher Education students, engagement will be fostered through mechanisms that acknowledge their voice and contribution to campus life, such as enhanced digital recognition through higher-tier badges that reflect greater impact or sustained involvement.

- **Data-Driven Feedback Analysis:** Automates qualitative and quantitative feedback categorization using Python's Pandas library for analysis
- **Event Insights and Recommendations:** Extracts trends and patterns to provide actionable insights and recommendations using rule-based algorithms or MongoDB aggregation pipelines/queries.
- **Performance Reporting:** Dynamically generates detailed visual and textual reports using libraries like Google Charts, with data sourced from MongoDB. These reports will also facilitate comparative analysis, allowing administrators to easily compare event performance across different periods, identify year-on-year improvements or declines for specific event types, or analyze feedback trends for particular clubs or programs. Reports will include export options (e.g., PDF, CSV) and automated email distribution to relevant stakeholders for convenience.
- **Certificate Generation:** Automatically generates and emails digital certificates for all participants who complete an evaluation, using PDFkit for PDF rendering and Nodemailer for distribution. Named submissions show real names; anonymous ones retain names only for certificate metadata.

- **Scalability and System Performance:** For high scalability and to prevent system crashes during peak usage, the proposed architecture will implement horizontal scaling, allowing for distribution of user load across multiple server instances. This will be complemented by a load balancer to intelligently route incoming traffic. Furthermore, caching mechanisms will be leveraged to reduce database queries for frequently accessed data, and intensive tasks will be handled through asynchronous processing to maintain overall system responsiveness.

- **Data Storage:** Ensures feedback data and reports are securely stored long-term using scalable solutions like MongoDB and its managed service, MongoDB Atlas.

Proposed System Tools and Technologies

The proposed system will utilize the following technologies:

1. **Design and Prototyping**

    - **Figma:** This collaborative interface design tool will be utilized for creating wireframes, mockups, and interactive prototypes. Figma enables rapid iteration and ensures an intuitive and user-friendly interface design before development commences.

2. **Frontend Development**

    - **React.js:** As a declarative JavaScript library, React.js will form the foundation of the user interface. Its component-based architecture will enable the development of reusable UI elements, facilitating efficient state management and dynamic single-page application functionality.

    - **Tailwind CSS:** This utility-first CSS framework will be used for styling the frontend. Tailwind CSS provides highly customizable, low-level CSS classes that accelerate responsive design and ensure a consistent visual aesthetic across the application.

    - **Vite:** A modern frontend build tool, Vite will enhance the development workflow for the React.js application. It offers extremely fast hot module reloading and optimized production builds, significantly improving development speed and deployment performance.

    - **Web Browsers:** Standard client-side software applications such as Google Chrome, Mozilla Firefox, and Microsoft Edge will serve as

the primary access points. They will render the system's user interface and enable seamless user interaction.

- **Google Charts:** This JavaScript library will be used for dynamically generating detailed visual reports and charts on the frontend, providing interactive data visualization for administrators.

3. **Frontend Development**

- **Node.js:** This JavaScript runtime environment will power the server-side logic of the application. Node.js's event-driven, non-blocking I/O model makes it highly scalable and efficient for handling concurrent requests, which is crucial for a responsive web application.

- **Express.js:** A minimalist and flexible Node.js web application framework, Express.js will be used to build the RESTful APIs that connect the frontend to the database. It simplifies server-side routing, middleware management, and API development.

- **MERN Stack:** The combination of MongoDB, Express.js, React.js, and Node.js will form the core infrastructure of the application. This full-stack JavaScript ecosystem ensures seamless data flow and a cohesive development environment from frontend to backend.

- **Python Pandas Library:** Python, specifically utilizing the Pandas library, will be integrated into the backend architecture for advanced data manipulation, analysis, and report generation. Pandas' robust data structures and analysis tools will be leveraged for tasks requiring complex data transformations,

aggregation, or statistical computations that complement the core Express.js functionalities.

- **Nodemailer:** This module for Node.js will be used to facilitate sending emails from the backend, enabling automated notifications, password resets, or other system-generated communications.

- **PDFKit:** This JavaScript PDF generation library will be employed within the backend to programmatically create and generate downloadable PDF reports or documents based on user data or system analytics.

4. **Database Management**

- **MongoDB:** A NoSQL document database, MongoDB will be utilized for flexible and scalable storage of the system's data, including user profiles, feedback records, and reports. Its schema-less design provides agility for quick prototyping and accommodating evolving data structures.

- **MongoDB Atlas:** This fully managed cloud database service for MongoDB will ensure secure, scalable, and highly available database hosting, allowing developers to focus on application development rather than database administration.

5. **Hosting and Deployment**

- **Vercel:** This platform will be primarily used for hosting the frontend React.js application due to its robust support for modern frontend frameworks, automatic deployments from Git repositories, and global edge network for fast load times.

- **Render:** This unified cloud platform will host the Express.js backend API (which will also integrate the Python Pandas functionalities). Render provides a seamless deployment experience for web services, databases, and cron jobs, ensuring reliable and scalable backend operations.

6. **Authentication**

- **Google Single Sign-On (SSO):** This authentication service will enable users to securely log into the system using their existing Google credentials. It simplifies the user authentication process, enhances security, and provides convenience by eliminating the need for separate system-specific passwords.

7. **Version Control and Collaboration**

- **GitHub:** This web-based platform will be essential for version control, facilitating collaborative development among team members. It allows for efficient code management, tracking changes, merging contributions, and implementing continuous integration/continuous deployment (CI/CD) practices to streamline development activities.

Proposed System Workflow

This section describes the optimized and automated workflow of the proposed Event Evaluation System.

Figure 1.7 provides a comprehensive overview of the proposed system's workflow, illustrating the interactions between authorized users, event organizers, the system itself, participants, and stakeholders. It traces the journey from survey creation and attendee list uploads, through automated survey distribution and feedback collection, to the generation of reports, certificates, and insights.

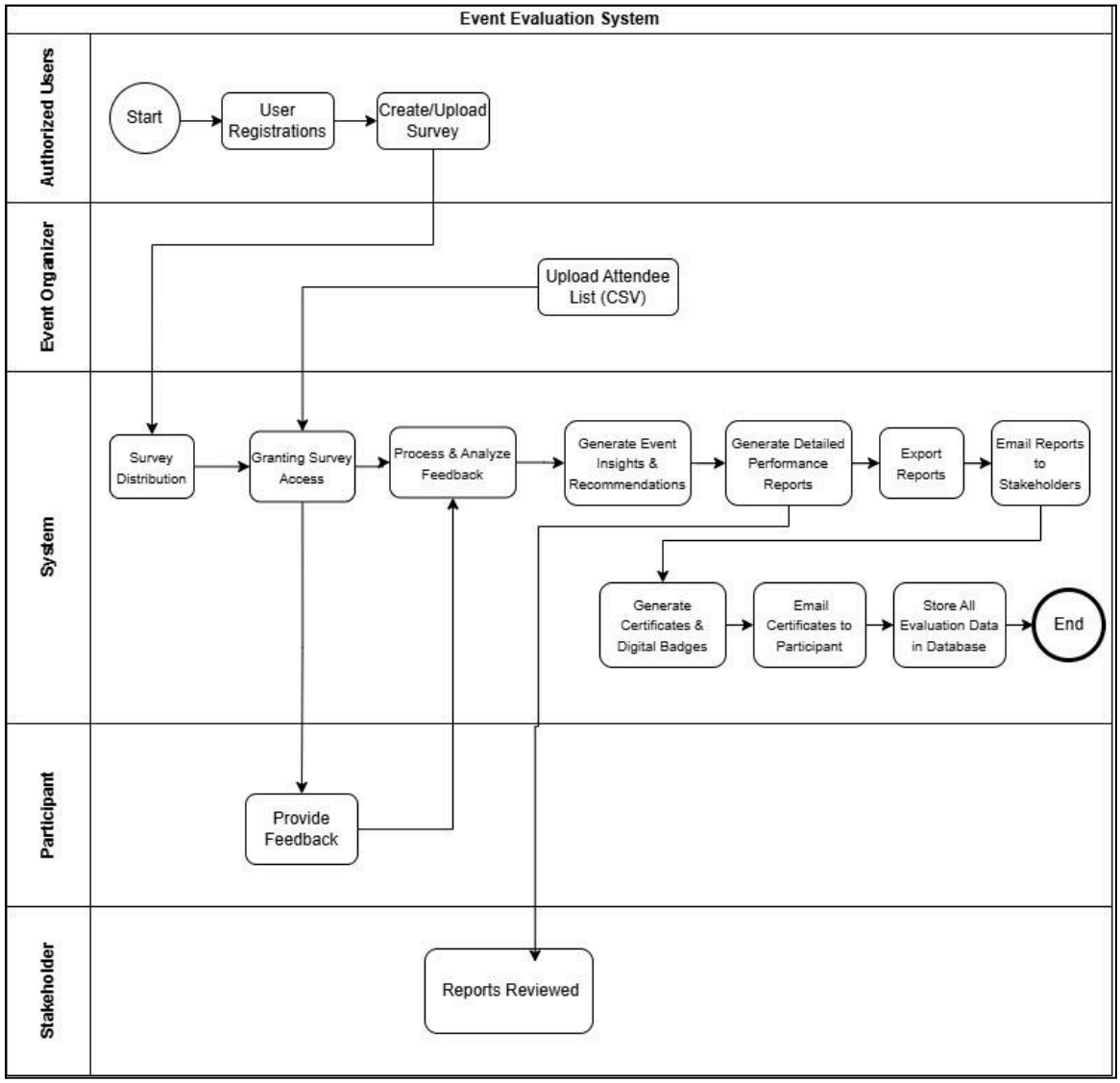


Figure 1.7: Overview of the Proposed System for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

- **Survey Creation:** Authorized users (PSAS Staff, Club Officers) create tailored surveys. Existing surveys can also be uploaded for integration.
- **Survey Distribution & Participant Eligibility:** Surveys are distributed based on user roles and event attendance. Event organizers upload a CSV list of confirmed attendees, and the system grants survey access only to eligible participants, ensuring feedback comes from actual attendees.
- **Feedback Response:** Participants provide feedback via interactive tools and structured inputs (e.g., Likert-scale ratings). A comments section allows for qualitative feedback.
- **Automated Feedback Analysis:** The system processes data, categorizing structured inputs and analyzing qualitative comments using its integrated technologies. Quantitative data is visualized, and qualitative themes are summarized.
- **Event Insights and Recommendations:** The system analyzes trends from feedback to generate insights and recommendations for future events.
- **Performance Reporting:** Detailed reports summarizing evaluation results, trends, ratings, insights, and recommendations are automatically generated for review by stakeholders (PSAS, Program Heads, Senior Management). These reports will incorporate historical data for comparative analysis of event performance over time and can be exported in various formats and automatically emailed to relevant stakeholders for convenience.
- **Certificate Generation and Distribution:** Upon evaluation completion, the system generates and emails certificates. It also awards digital

badges based on participation and specific criteria, tailored to the participant's education level. Named submissions include real names; anonymous ones detach responses from identifiers but retain the name for certificate metadata.

- **Storage:** All evaluation data is stored in a scalable database for future reference.

Beyond the high-level workflow, understanding the system's underlying data management is crucial. **Figure 1.8** details the data flow within the proposed system, illustrating the movement of information from registration to initial survey management and distribution, through feedback collection and automated analysis, to reporting, certificate generation, and final data archiving. It highlights the processes and data stores involved at each stage. Furthermore, the logical organization of the proposed system's database, including its entities and their relationships, is depicted in **Figure 1.9**. This diagram outlines the key entities that will store the system's data and defines the relationships between them, ensuring data integrity and efficient retrieval for comprehensive data management.

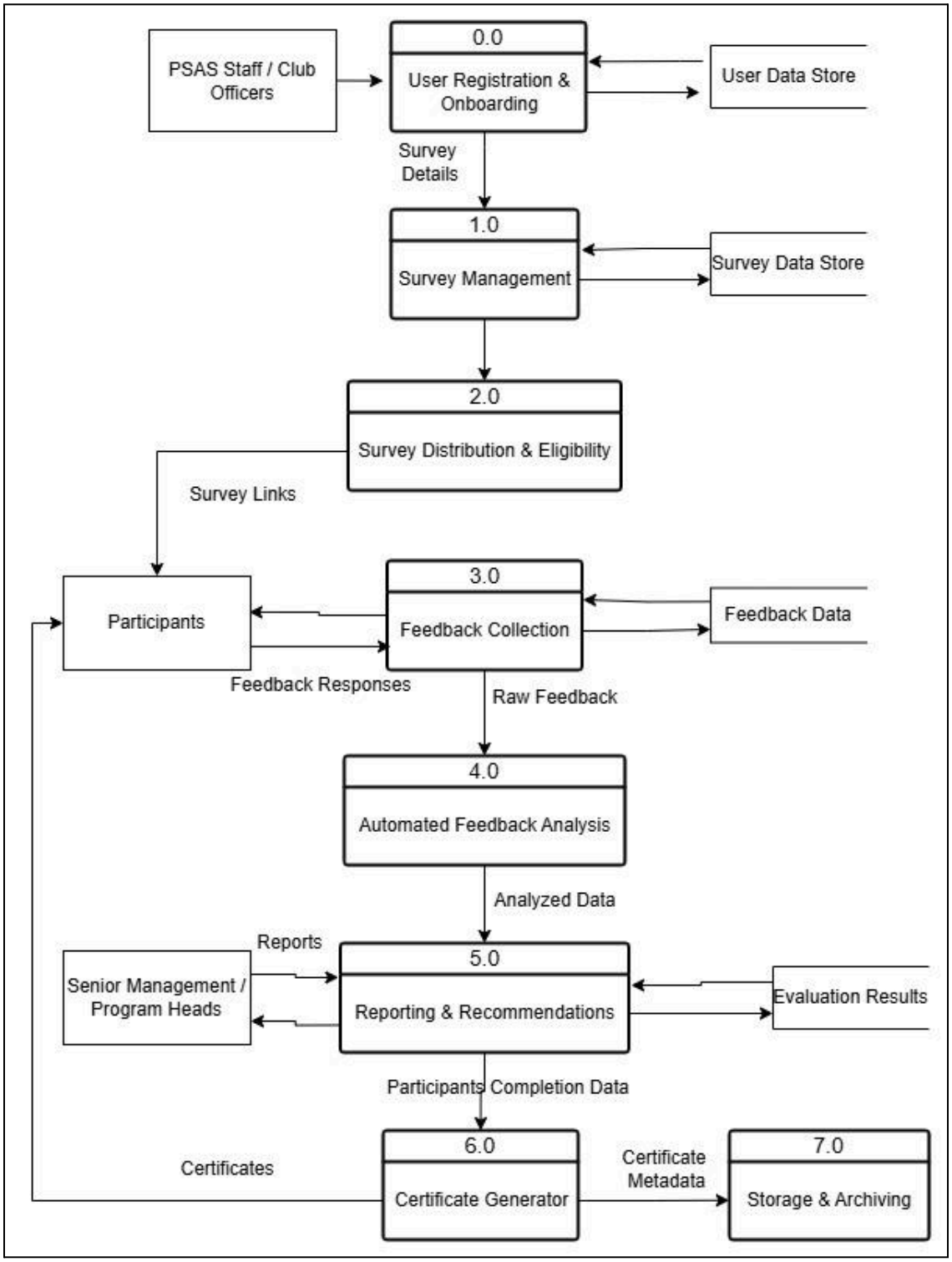


Figure 1.8: Data Flow Diagram of the Proposed System for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

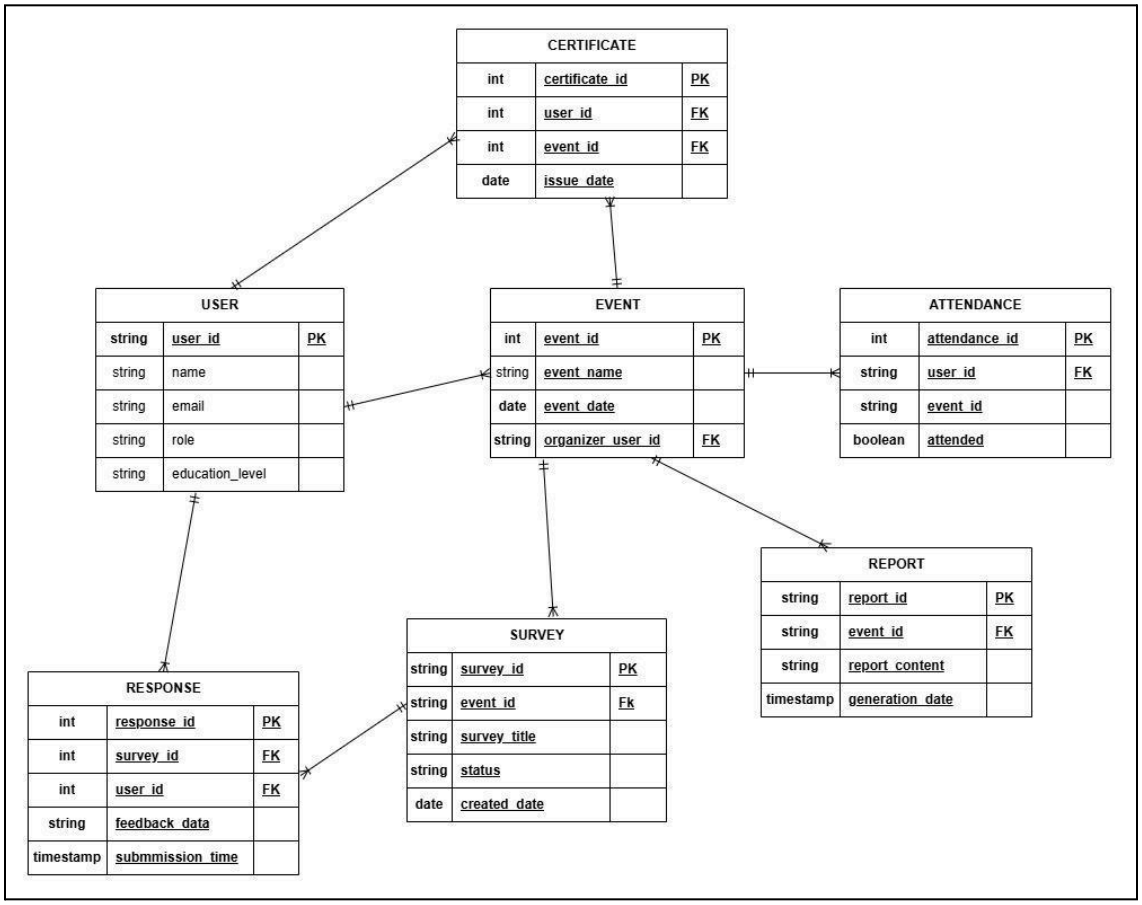


Figure 1.9: Entity Relationship Diagram of the Proposed System for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

Finally, to illustrate how various users interact with the system's functions, **Figure 1.10** provides the Use Case Diagram of the Proposed System. This diagram delineates the interactions between different actors (PSAS Staff, Club Officers, Program Heads, Senior Management, and Participants) and the system's automated and manual functions, visually representing key functionalities such as managing surveys, accessing reports and insights, submitting event feedback, and automated core processes like attendance validation and certificate generation.

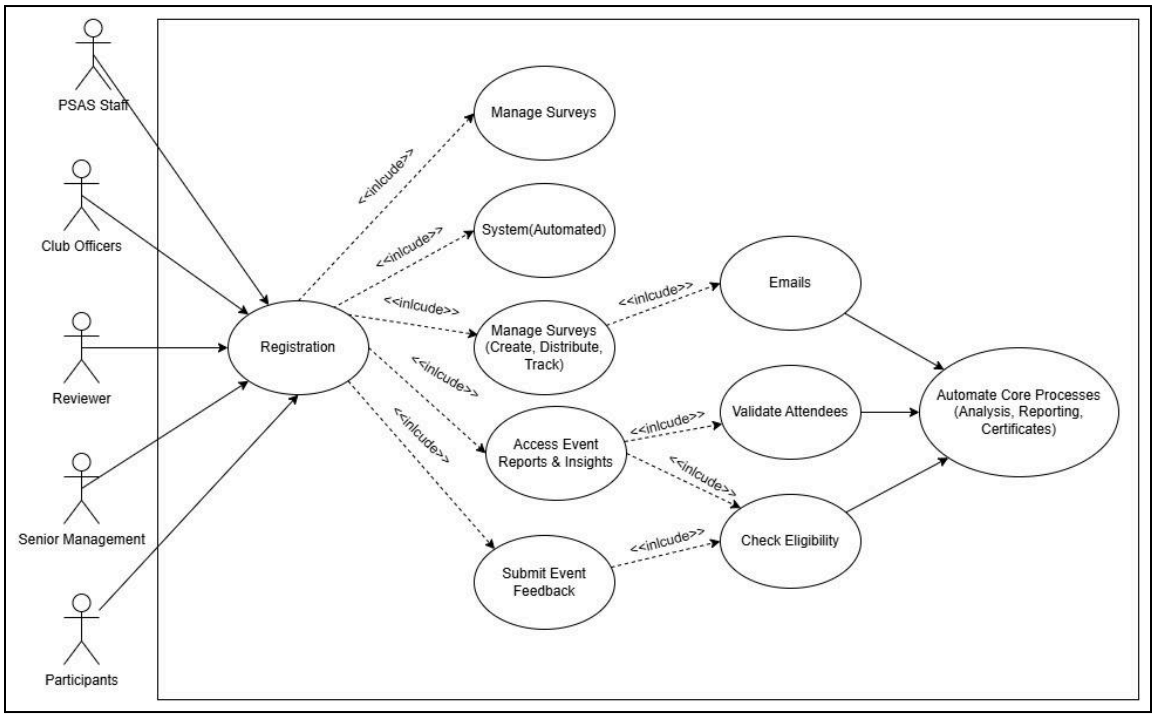


Figure 1.10: Use Case Diagram of the Proposed System for Event Evaluation at La Verdad Christian College - Apalit, Pampanga

1.1 - Statement of the Problem

The current process of event evaluation at La Verdad Christian College remains largely reliant on manual workflows, leading to considerable inefficiencies in the analysis and utilization of feedback. Although Google Forms is widely used for survey creation and feedback collection, the absence of an advanced technological tool constrains the institution's ability to enhance future event planning based on comprehensive feedback.

1.1.1 - Specific Challenges

These challenges manifest in several ways:

- **Inefficient Feedback Analysis:** Manually sorting and analyzing survey responses, especially extracting actionable insights from qualitative feedback, is a time-consuming process highly susceptible to human error. Even with quantitative data from Likert scales, the current process struggles to efficiently synthesize it for meaningful improvements. This delays the generation of actionable insights, preventing the institution from implementing timely event enhancements.
- **Difficulty in Interpreting Qualitative Responses:** The absence of automated tools hinders the extraction of valuable insights from qualitative inputs, resulting in inconsistent interpretations that obstruct efficient decision-making.
- **Limited Technological Integration:** Current reliance on Google Forms for feedback collection lacks features like dynamic feedback, real-time progress tracking, and automated analysis, which restricts the system's overall usefulness, efficacy, and efficiency.

- **Limited Scalability:** The existing process struggles to handle and manage multiple simultaneous evaluations, leading to overwhelmed resources during peak periods.
- **Absence of Real-Time Progress Tracking:** Administrators cannot monitor survey completion rates in real-time, complicating the process of sending punctual reminders and efficiently tracking participant engagement.
- **Fragmented Club-Led Feedback Integration:** The independent management of club-led evaluations by Program-Specific Club Officers results in fragmented feedback data that is not systematically integrated into broader institutional reporting workflows, hindering comprehensive oversight and analysis.

Addressing these challenges and introducing new capabilities, this study seeks to answer the following research questions:

1. What features of the proposed system can improve the efficiency of quantitative feedback analysis, including Likert scale ratings?
2. What system functionalities can improve the interpretation of qualitative feedback responses?
3. What mechanisms can the proposed system use to efficiently integrate external survey tools like Google Forms?
4. What mechanisms ensure scalability for multiple simultaneous evaluations?
5. How can notifications and real-time tracking improve punctual survey creation and completion rates?

6. What less manual processes can be implemented to ensure only actual event attendees are able to submit evaluations?
7. What system-based recognition mechanisms can the proposed system utilize to increase student participation and engagement in providing feedback?
8. How can the proposed system facilitate comparative analysis of event performance over time using historical data?
9. What will enable the efficient export and automated email distribution of performance reports?
10. What mechanisms can integrate club-led feedback into institutional reporting workflows?

1.2 - Objectives of the Study

This study aims to address the deficits of the current event evaluation process at La Verdad Christian College - Apalit, Pampanga, motivated by the need to simplify the event evaluation process using technological solutions that address and fill the identified gaps, laying the groundwork for the development of a system that emphasizes usability, automation, and actionable insights, allowing event evaluations to be completed more efficiently and effectively.

1.2.1 - General Objective

To develop a user-friendly web-based "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports" that streamlines feedback collection, analysis, and reporting for La Verdad Christian College - Apalit, Pampang

1.2.2 - Specific Objectives

1. To design an intuitive and secure platform with role-based access, ensuring usability and data protection.
2. To incorporate interactive, gamified survey elements to enhance participation and feedback quality.
3. To automate feedback analysis for both qualitative and quantitative inputs, reducing manual effort and improving accuracy.
4. To generate and distribute actionable insights and structured reports, with export capabilities and automated emailing, supporting data-driven event planning and improvements and facilitating comparative analysis over time.

5. To integrate external tools like Google Forms for flexible survey creation and management.
6. To enable real-time tracking, automated notifications, and timely survey completion monitoring.
7. To implement a less manual process for verifying participant eligibility based on event attendance, ensuring only actual attendees can provide feedback.
8. To automate certificate issuance for recognized participation, ensuring secure retrieval and verification.
9. To ensure scalable data storage, long-term archival, and institutional compliance for future analysis while effectively managing concurrent user loads.

1.3 - Significance of the Study

This study aims to benefit various stakeholders at La Verdad Christian College - Apalit, Pampanga by improving the event evaluation process, enhancing institutional decision-making and fostering a culture of continuous improvement.

The Institution. The study's findings and outcomes will improve the overall event evaluation process, enhance institutional decision-making, and contribute to a culture of future and continuous improvement at La Verdad Christian College - Apalit, Pampanga.

School Admin - The Senior Management. By providing data-driven reports, insights, and actionable suggestions, the system will support the school administration in making well-informed decisions to improve institutional operations.

The Prefect of Student Affairs and Services. The system will streamline the event evaluation process for the PSAS Department assuring consistent, standardized, and accurate reporting.

School Admin - Program Heads and Assistant Principals. The system will benefit program heads and assistant principals by seamlessly facilitating their role in understanding and ensuring the alignment of feedback data with institutional standards.

MIS Department. The system will provide MIS IT professionals with a centralized platform for event data management, simplifying technical support and system maintenance.

Program-Specific Club Officers. By automating data analysis and streamlining reporting methods, the system can reduce operational duties and

enable Program-Specific Club Officers to focus more on organizing successful events.

Participants. Students and/or attendees can discover that their feedback is effectively utilized, leading to tangible improvements in events and fostering greater engagement.

Future Researchers. This study provides a valuable reference for future academic and institutional research by offering a foundational framework and insights into streamlining feedback systems.

1.4 - Scope and Limitations

1.4.1 - Scope

Effective event evaluation is crucial in driving institutional development and guaranteeing participant engagement. However, manual processes often impair efficiency, accuracy, and scalability. This study focuses on designing and developing a web-based event evaluation system exclusively for La Verdad Christian College - Apalit, Pampanga. The system aims to modernize evaluation processes by improving accessibility, automation, and integration with existing institutional tools and resources.

Specifically, the study aims to:

1. Automate data analysis for quantitative and qualitative inputs, reducing manual efforts and improving accuracy.
2. Support interaction with technologies such as Google Forms, which provides flexibility in survey development and feedback gathering.
3. Generate, export, and email reports with insights and recommendations to guide decision-making and enhance event quality, including comparative analysis of historical data.
4. Enable real-time monitoring of survey progress and participant involvement to improve response rates and transparency.
5. Ensure scalability to handle multiple simultaneous assessments and high concurrent user loads, accommodating various events efficiently.
6. Implement a batch upload mechanism for attendance lists to ensure only eligible attendees can submit feedback.

7. Implement user access levels to differentiate accessibility between administrators, senior management, program heads, assistant principals, club officers, and participants, ensuring proper data flow and access control.

8. Employ basic security measures to secure survey answers and prevent unwanted access.

9. Automate certificate issuance upon evaluation completion, ensuring formal recognition for participation, alongside other interactive engagement methods.

10. Establish a structured storage system to safely store survey results, historical assessment data, and produced reports for future reference and analysis.

1.4.2 - Delimitations

While this study seeks to address key challenges in the event evaluation process at La Verdad Christian College - Apalit, Pampanga, certain constraints are considered defining its boundaries.

These limitations reflect practical considerations in system implementation and institutional requirements.

1. **Absence of AI Functionalities**

   AI functionalities are excluded due to cost, maintenance complexity, and the learning curve required for integration. Instead, the system leverages existing technologies to ensure efficiency without added resource demands.

2. **Lack of a Dedicated Mobile Application**

   The system does not include the development of a dedicated mobile application; instead, a responsive interface will be used to guarantee device compatibility across multiple screen sizes.

3. **Dependence on Internet Connectivity**

   The system requires a stable internet connection, which might restrict usage in the event of network outages or connectivity concerns.

4. **Primary Focus on Student Event Feedback & External Stakeholder Involvement**

   The evaluation system is primarily designed to solicit feedback from student participants in events. While other key stakeholders (e.g., PSAS staff, Program-Specific Club Officers, MIS IT Professionals) are involved in providing feedback on the system's usability and effectiveness, the core event evaluation data collection focuses on

student experiences. Feedback for events exclusively organized for and by staff members is outside the scope to maintain project feasibility and timely development.

5. **Focus on Post-Event Evaluation**

   The system does not handle event planning, scheduling, or logistical coordination, as its sole focus is post-event evaluation and feedback analysis.

6. **Institutional Review Role of Senior Management and Program Heads / Asst. Principals**

   Senior management and program heads serve as institutional reviewers of event evaluation reports but are not direct users of the system. Their feedback is incorporated through structured document analysis and consultation rather than direct usability testing or survey participation.

1.5 - Definition of Terms

Actionable Insights. Practical conclusions derived from data analysis that guide strategic decision-making and lead to measurable improvements in event quality.

Agile Methodology. A software development approach that emphasizes iterative development, flexibility, collaboration, and continuous improvement through self-organizing teams.

API (Application Programming Interface). A set of rules and protocols that allows different software applications to communicate and interact with each other, facilitating data exchange between the system's frontend and backend.

Asynchronous Processing. A method of executing tasks independently without waiting for each to finish, allowing the system to remain responsive, particularly for intensive backend operations like report generation.

Authentication. The process of verifying a user's identity to ensure secure system access for authorized individuals and roles.

Backend. The server-side of a web application, responsible for data storage, processing logic, and communication with the database.

Caching Mechanisms. Techniques used to temporarily store copies of frequently accessed data (e.g., event details or report summaries), reducing the need for repeated database queries and improving system responsiveness.

Client-Side. Refers to operations and code that are executed on the user's web browser, such as the rendering of the user interface.

Comparative Analysis. The process of evaluating event performance over different periods, identifying year-on-year trends, or comparing results

across various event types or club programs to highlight improvements or declines.

CSV (Comma Separated Values). A simple, plain-text file format used to store tabular data (numbers and text) in plain text, commonly employed for batch uploads of attendee lists or for exporting report data.

Data-Driven Feedback Analysis. The systematic process of collecting, processing, and interpreting user feedback using analytical tools to derive actionable insights and support informed decision-making for event improvement.

Database. An organized collection of structured information, or data, typically stored electronically in a computer system, serving as the persistent storage for the system's information.

Deployment. The process of making a developed software application available for users to access and use, typically by pushing code to a hosting server.

Digital Badges. Visually appealing online representations of achievements, skills, or participation, awarded as a form of recognition for students completing evaluations.

Event Evaluation System. The proposed web-based platform designed to streamline the collection, organization, analysis, and reporting of feedback for school and program events at La Verdad Christian College.

Express.js. A minimalist and flexible Node.js web application framework used to build the RESTful APIs and manage server-side routing for the system's backend.

Figma. A collaborative web-based interface design tool utilized for creating wireframes, mockups, and interactive prototypes of the system's user interface.

Frontend. The user-facing part of a web application, including everything a user sees and interacts with directly in their web browser.

Gamified Elements. The application of game-design elements and game principles in non-game contexts (e.g., awarding badges) to enhance user engagement and encourage participation in feedback mechanisms.

GitHub. A web-based platform used for version control and collaborative software development, enabling code management, change tracking, and team contributions among developers.

Google Charts. A JavaScript library used for creating interactive and dynamic data visualizations (e.g., charts, graphs) within the system's performance reports on the frontend.

Google Single Sign-On (SSO). A secure authentication method that allows users to log into the proposed system using their existing Google credentials, simplifying access and enhancing security.

Horizontal Scaling. A method of scaling an application by adding more servers or instances to distribute the user load, enhancing system performance and preventing crashes during peak usage.

HTTPS (Hypertext Transfer Protocol Secure). A secure version of HTTP that encrypts data during transmission between the user's web browser and the server, ensuring data privacy and integrity.

ISO/IEC 25010. A software quality standard used to evaluate systems based on key quality characteristics such as functional suitability, performance efficiency, usability, reliability, security, maintainability, and portability (Britton, 2021).

JWT (JSON Web Token). A compact, URL-safe means of representing claims to be transferred between two parties, commonly used for secure session management and authentication in web applications.

Kirkpatrick Model. A widely recognized framework for evaluating the effectiveness of training programs and interventions, typically categorized into four levels: Reaction, Learning, Behavior, and Results.

Load Balancer. A device or software that distributes incoming network traffic across multiple server instances, optimizing resource utilization, maximizing throughput, and minimizing response time.

Likert Scale. A psychometric scale commonly used in surveys to measure attitudes or opinions, typically presented as a range of responses (e.g., "Strongly Disagree" to "Strongly Agree").

MERN Stack. An acronym for MongoDB, Express.js, React.js, and Node.js, representing a popular full-stack JavaScript ecosystem used for building web applications.

MIS Department (Management Information Systems Department). The department within La Verdad Christian College responsible for developing, managing, and maintaining the institution's technical systems, including providing technical support for the proposed evaluation system.

MongoDB. A NoSQL document-oriented database utilized for flexible and scalable storage of the system's various data, including user profiles, feedback records, and reports.

MongoDB Atlas. A fully managed cloud database service for MongoDB, providing automated scaling, backups, and high availability for the system's data storage.

Node.js. A JavaScript runtime environment that executes server-side code, enabling the development of scalable and efficient network applications for the system's backend.

Nodemailer. A Node.js module used for sending automated emails from the backend, facilitating notifications, reminders, and certificate distribution.

OAuth 2.0. An industry-standard protocol for authorization that allows third-party applications (like the proposed system) to obtain limited access to a user's service (like Google credentials) without exposing their full credentials.

Pandas. A powerful open-source Python library used for data manipulation and analysis, particularly effective for processing tabular data like CSV files.

PDFKit. A JavaScript PDF generation library used on the server-side to programmatically create and render PDF documents, such as automated certificates and reports.

Performance Reports. Detailed visual and textual summaries generated from collected evaluation data, providing insights into event performance, identifying trends, and offering actionable recommendations.

Program-Specific Club Officers. Individuals within La Verdad Christian College responsible for managing, organizing, and evaluating club-led activities and events specific to their academic programs.

PSAS Department (Prefect of the Student Affairs and Services Department). The specific department at La Verdad Christian College - Apalit,

Pampanga, responsible for overseeing student-related event evaluations and a primary stakeholder of the system.

Qualitative Feedback. Non-numerical, descriptive feedback (e.g., written comments, open-ended responses) that provides in-depth insights into users' experiences, opinions, and feelings about events.

Quantitative Feedback. Numerical feedback (e.g., ratings, scores, Likert scales) that can be measured and statistically analyzed to identify trends and patterns in event evaluations.

React.js. A JavaScript library for building dynamic and responsive user interfaces, forming the foundation of the system's frontend.

Real-time Tracking. The ability to monitor survey completion rates and participant engagement as events unfold, allowing for timely interventions and reminders.

Render. A unified cloud platform used for hosting the system's backend web services (Node.js/Express.js) and facilitating continuous deployment.

RESTful API (Representational State Transfer Application Programming Interface). An architectural style for designing networked applications that emphasizes stateless communication and the use of standard HTTP methods (GET, POST, PUT, DELETE) to interact with resources (e.g., event data, feedback) through standard interfaces, typically exchanging data in JSON format. This design enables interoperability between different software systems.

Role-Based Access Control (RBAC). A method of restricting system access and functionalities to authorized users based on their defined roles and associated permissions.

Scalability. The ability of the proposed system to efficiently handle a growing amount of work or increasing user load (e.g., multiple simultaneous evaluations) by adding resources.

Server-Side. Refers to operations and code that are executed on the web server, handling data processing, database interactions, and business logic.

Single Sign-On (SSO). An authentication process that allows a user to access multiple applications (like the proposed system) with a single set of login credentials, enhancing user convenience.

Software as a Service (SaaS). A software distribution model in which a third-party provider hosts applications and makes them available to customers over the Internet on a subscription basis.

Stakeholder. Any individual, group, or organization that has an interest in or can be affected by the outcome of the project.

Tailwind CSS. A utility-first CSS framework that provides highly customizable, low-level utility classes for rapid UI development and consistent visual styling of the system's frontend.

Technology Acceptance Model (TAM). A theoretical model used to measure whether users will accept and use a system based on its perceived usefulness and perceived ease of use.

Vercel. A cloud platform primarily used for hosting the system's frontend React.js application, known for its fast deployments and global content delivery.

Version Control. A system that records changes to a file or set of files over time so that you can recall specific versions later, essential for collaborative software development (e.g., using GitHub).

Vite. A fast frontend build tool that significantly improves the development experience and optimizes the performance of the system's React-based interface.

Web-based Application. A software program that is accessed via a web browser over a network connection, rather than being installed directly on a user's device.

Web Browser. Client-side software (e.g., Google Chrome, Mozilla Firefox) used by users to access and interact with the web-based event evaluation system.

Weighted Mean. A statistical measure that calculates the average of a set of values, where each value contributes differently to the final average based on an assigned weight, applicable for analyzing survey ratings.

Weighted Standard Deviation. A statistical measure that indicates the dispersion of data points around the weighted mean, providing insight into the variability of weighted values in survey responses.

CHAPTER 2: REVIEW OF RELATED LITERATURE / SYSTEMS

This chapter details a thorough examination of existing literature and systems, emphasizing the development of the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga". The review identifies deficiencies in current processes and systems by analyzing established literature, frameworks, methodologies, and technological advancements that the study intends to address.

This chapter is systematically divided into three key sections:

- **Review of Related Literature (RRL)** - This section examines theoretical foundations, evaluative methodologies, and institutional implementations.
- **Review of Related Systems (RRS)** - This section puts emphasis on current platforms, their functionality, and constraints.
- **Theoretical and Conceptual Framework** - This section integrates the insights from the literature and system reviews to establish the foundational theories and the guiding conceptual model for the proposed system, ensuring coherence with institutional objectives and best practices in event evaluations.

2.1 - Review of Relevant Literature

2.1.1 - Event Evaluation and Evaluation Model

Effective event evaluations offer data-driven insights that improve engagement, efficiency, and quality. Cinco (2022) argued that implementing post-event evaluations ensures that subsequent events succeed more than their predecessors. These evaluations provide organizers with a comprehensive understanding of the event's strengths and weaknesses, which is essential for developing a more effective event planning strategy.

The Kirkpatrick Model, a well-established framework for event evaluation, assesses input on four levels: Reaction, Learning, Behavior, and Results.

Ardent Learning (2020) noted that the said model offers a systematic way to develop actionable assessment techniques, establish specific targets, monitor outcomes, and find impact areas. While predominantly applied in corporate training, its direct adaptability to diverse and evolving contexts, such as academic institutions, is limited. Specifically, its rigid, hierarchical structure may not fully capture the nuanced, often informal, and multifaceted learning and behavioral outcomes common in varied school events, making comprehensive assessment challenging without significant modification.

2.1.2 - Event Evaluation in School Settings

Event evaluations are crucial for improving programs and ensuring alignment with institutional objectives. Their significance extends beyond logistical assessments; effective event organization demands substantial effort, expertise, and strategic planning to achieve intended outcomes. A well-structured evaluation framework can provide valuable insights that enhance efficiency, optimize resource distribution, and facilitate ongoing improvement in event management, thereby significantly influencing decision-making by highlighting areas that require enhancement.

According to Nordvall and Brown (2018), citing the works of Kim et al. (2015) and Liu (2016), current methods, measures, and scales used to evaluate social impacts are primarily focused on case studies of singular events. These methods are tailored to capture the social implications of a specific event genre, such as sporting events, rather than being adaptable to various event types. This lack of comparability between studies limits the transferability of research findings, making it challenging to apply insights gained from one event to a diverse range of activities within an institution or broader destination. This highlights a critical need for a more standardized and flexible evaluation approach in educational environments.

2.1.3 - Institutional Decision Making and Roles of Administrative School Departments

Event evaluations provide administrators with information regarding the strategic priorities influenced by programs and events. Drawing on Filiz and Nayir (2015), Doygunel and Koprulu (2022) assert the vital role of extracurricular activities in students' campus lives. Therefore, school administrators must function as planners, coordinators, and mentors, ensuring educators fully acknowledge, promote, and integrate the value of these activities into the educational framework.

Research by Brown et al. (2015) also emphasizes that structured evaluation processes provide actionable insights. Feedback gathered from evaluations enables administrators to understand the impact of events on their strategic priorities. These insights empower schools to refine their approach to event management and achieve better engagement and overall success through an iterative process that ensures institutional goals and objectives are explicitly prioritized in event planning and execution through well-informed institutional decision-making. Despite this, the integration of administrative decision-making tools with evaluation processes remains inadequate, impeding the development of actionable strategies. This deficiency obstructs data-driven decision-making concerning stakeholder engagement, resource allocation, and program improvement, consequently diminishing the overall efficacy of institutional planning and management. This gap underscores the need for systems that seamlessly connect evaluation data to administrative insights.

2.1.4 - Methods for Collecting Feedback

The collection of feedback is an essential component of an effective evaluation process, acting as a vital step in acquiring insights for strategic decision-making and ongoing organizational improvement. In order to efficiently accumulate feedback, a variety of methodologies are implemented (Team Effectiveness, 2024):

- **Surveys and Questionnaires:** Surveys and questionnaires are widely used for gathering quantitative and qualitative data from various stakeholders and respondents, enabling systematic data collection from a substantial participant population, valued for their scalability, user-friendliness, and adaptability. Practical enhancements, such as the incorporation of surveys via QR codes for offline access (Cleave, 2021), demonstrate innovative strategies to significantly improve usability and increase response rates by enabling simpler participation.

- **Interviews and Focus Groups:** Interviews and focus groups allow evaluators to engage closely with stakeholders, eliciting detailed and significant insights through comprehensive dialogue. These qualitative methods can be conducted via in-person meetings, telephone conversations, or online platforms, facilitating a comprehensive examination of perceptions and motivations that quantitative methods may neglect.

- **Observations and Evaluations:** By employing techniques such as peer reviews, documentations, and direct observations, evaluators can objectively evaluate results, performance, and behavior. This method delivers empirical evidence of actions and outcomes in

real-time, whether executed in person or remotely, presenting an unmediated perspective of event impact or participant involvement.

Although each method has distinct advantages and yields valuable data, a continual challenge is that the thorough integration and analysis of both qualitative and quantitative feedback frequently remain insufficiently automated or examined. This constraint impedes the capacity to provide genuinely holistic and comprehensive assessments that encompass both the "what" and the "why" of event outcomes. This study seeks to directly confront this limitation by proposing a system that seamlessly amalgamates these varied approaches to improve overall usability and comprehensiveness in event evaluation.

2.1.5 - Data Analysis Techniques: Quantitative and Qualitative Analysis in Event Evaluations

The discipline of data analysis has significantly progressed from initial statistical endeavors by trailblazers such as John Grant to Florence Nightingale's transformative public health initiatives, now constituting the essential foundation of contemporary evidence-based decision-making. In modern contexts, the methodical use of data analysis serves as the foundation for informed decision-making, significantly transitioning dependence from intuition to empirical evidence (Soegaard, 2025).

Data Analysis comes in two forms: quantitative and qualitative.

- **Quantitative Analysis:** Quantitative analysis employs numerical data to identify patterns, evaluate performance, and support statistical conclusions to provide actionable insights into optimizing strategies and fostering data-driven decisions.

- **Qualitative Analysis:** Qualitative analysis interprets non-numerical data, exploring the underlying factors, patterns, and meanings behind observable trends. This method is beneficial for understanding user motivations and experiences. Unlike quantitative data, which indicates trends, qualitative analysis of the underlying causes of user behaviors provides nuanced insights to improve and build engagement.

Apira (2024) asserts that it is essential to amalgamate both methodologies to deliver genuinely balanced and thorough assessments. This mixed-methods approach provides a comprehensive understanding by integrating the extensive scope of quantitative data with the profound insights of qualitative analysis. Despite its clear potential, the real-time implementation of these integrated methods in practical institutional settings is significantly constrained, providing ample opportunity for innovation in automated analytical tools. This study directly tackles these challenges by proposing flexible frameworks specifically designed for real-time, integrated data analysis in event evaluations, with the objective of bridging the divide between extensive data collection and actionable insights.

2.1.6 - Impact of Feedback in Event Evaluations

Evaluation feedback is an essential mechanism for fostering improvement and guiding performance. Grimm (2024) differentiates between two primary types of feedback: descriptive and evaluative. Evaluative feedback offers comparative judgments and quantitative assessments that are predicated based on predefined criteria (Gamlem, 2015). It provides an objective measure of performance but often lacks individualized insights. In contrast, Grimm (2024) also cited Berger et al. (2019), highlighting descriptive feedback for its specificity in providing individualized recommendations. It identifies particular areas for enhancement and provides practical recommendations, allowing recipients to implement informed modifications.

A study by Al Bashir (2016), referencing Boud (2000), thus emphasizes the potential of feedback in bridging the gap between current and desired performance. Feedback discussions provide opportunities for learners or stakeholders to address deficiencies, align with performance expectations, and take steps toward achieving desired outcomes.

While descriptive feedback enables meaningful adjustments that foster both individual and institutional growth, evaluative feedback is essential for establishing objective assessments that drive informed decision-making. This study enhances these perspectives by proposing that systems should integrate both forms of feedback, thus creating a balanced approach for continuous development. By combining feedback, institutions can balance performance measurement with actionable improvement strategies, ensuring a continuous cycle of learning from mistakes, development, and alignment with institutional objectives.

2.2 - Reviews of Related Systems

2.2.1 - Google Forms

Link: https://workspace.google.com/intl/en_ph/products/forms/

Google Forms is a web-based application that is widely used and primarily purposed for creating surveys, quizzes, and other digital forms. It provides a variety of question types, including multiple-choice and open-ended responses, as well as basic conditional logic to guide users through questionnaires. This platform operates seamlessly within Google's extensive Cloud Platform (GCP) infrastructure as an integral component of Google Workspace (Cloud Computing, Hosting Services, and APIs, n.d.). Google Forms is a popular choice for quick data collection due to its exceptional ease of use and widespread accessibility, necessitating no specialized coding expertise needed. Its cost-free model for general use is particularly appealing to educational institutions with budget constraints. Responses are automatically aggregated into a corresponding Google Sheet, which aids in the organization of fundamental tabular data for initial review (Google, n.d.).

However, its limitations become evident when assessing the more intricate analytical demands of comprehensive event evaluation. Specifically, it lacks sophisticated features for thorough qualitative data analysis, offering only basic summary charts. While it allows for open-ended responses, automation for deeper insights remains quite basic, restricted to notifications for new submissions. This limitation complicates the extraction of recurring themes and hinders in-depth analysis of open-ended feedback and comments, necessitating manual interpretation or external analytical tools for comprehensive qualitative assessment, a gap that the proposed system aims to fill.

2.2.2 - Microsoft Forms

Link: https://forms.office.com/

Microsoft Forms, a web-based application within the Microsoft 365 suite, is intended to simplify the development of surveys, quizzes, and polls by allowing adaptive questionnaire design through branching logic, which customizes responses based on previous inputs. Built on the robust Microsoft Azure cloud platform, Microsoft Forms guarantees dependability and seamless integration within the broader Microsoft ecosystem. Its responsive front-end leverages contemporary web technologies, while Microsoft's scalable cloud services drive the back-end infrastructure (Microsoft Forms, n.d.). This platform's compatibility with Microsoft 365 applications like Excel and MS Teams offers a substantial advantage for organizations deeply committed to the Microsoft product ecosystem.

Nonetheless, its analytical capabilities are rudimentary, especially in processing nuanced qualitative feedback. Similar to Google Forms, its reporting features offer limited customization, restricting its ability to produce detailed insights for thorough institutional decision-making. Moreover, its profound integration within the Microsoft ecosystem may limit flexibility and interoperability for institutions employing varied technology stacks, potentially necessitating supplementary configuration or middleware solutions for integration with non-Microsoft platforms.

2.2.3 - Jotform

Link: https://www.jotform.com/

Primarily designed for extensive data collection, Jotform is an advanced online form builder aimed at increasing user involvement and aligning with organizational branding. It offers features such as customizable form design, sophisticated conditional logic for dynamic interactions, and integrated payment processing to avail advanced functionalities. Its robust Application Programming Interface (API) enables seamless integration with various third-party applications (Jotform, n.d.). While Jotform's advanced features and high usage limits usually call for paid subscriptions, potentially increasing operational costs for educational institutions, its improved reporting capabilities and flexible design offer great advantages over more basic survey tools.

However, its lack of support for automated qualitative data analysis outside of basic text and keyword identification clearly shows a restriction. This constrains its applicability for entities requiring sophisticated data processing capabilities.

2.2.4 - SurveyMonkey

Link: https://www.surveymonkey.com/

SurveyMonkey, an acclaimed leading online survey platform, provides comprehensive functionalities for professional survey creation, dissemination, detailed data analysis, and extensive reporting. It offers a diverse array of question formats, intricate survey logic, and extensive statistical analysis features, including cross-tabulation and significance testing. Furthermore, it incorporates customizable dashboards for professional data summaries and

supports various distribution modalities, such as social media, email campaigns, and web links (SurveyMonkey, n.d.-a). Operating as an enterprise-level Software as a Service (SaaS) solution, SurveyMonkey utilizes a robust, highly scalable cloud infrastructure adept at handling substantial traffic and vast data volumes, ensuring reliability for large-scale assessments. Its key advantage lies in these extensive features for professional survey design and robust quantitative analytical tools guaranteeing statistical accuracy, facilitating the production of high-quality, customizable reports.

Educational institutions seeking a cost-effective, comprehensive solution may face financial constraints due to elevated response limits and subscription costs linked to advanced functionalities. Although it can collect qualitative responses, its primary limitation lies in its inability to perform automated, comprehensive qualitative analysis, such as advanced thematic or sentiment analysis, which generally necessitates manual interpretation or specialized external tools.

2.2.5 - NVivo

Link: https://lumivero.com/products/nvivo/

NVivo is a sophisticated and potent qualitative data analysis (QDA) software (Lumivero, 2025). It is specifically designed to systematically organize, analyze, and derive insights from unstructured or qualitative data. This includes multimedia files, articles, social media content, comprehensive interviews, and open-ended survey responses. Its fundamental capabilities enable researchers to code themes meticulously, identify emergent patterns, perform sentiment analysis, and generate a variety of visualizations (including word clouds, cluster analyses, and relationship maps) that illustrate intricate data relationships. These capabilities are designed to bolster rigorous

qualitative research methodologies. NVivo's analytical engine is predominantly a desktop application accessible on Windows and macOS platforms. It primarily operates as a powerful desktop application and utilizes advanced algorithms for text processing, data indexing, and natural language processing. Additionally, it is frequently integrated with cloud options for collaborative project management.

Although NVivo provides researchers with unparalleled capabilities for deep, systematic qualitative analysis, allowing them to achieve high levels of methodological rigor and auditability in their work, is accompanied by a substantial proprietary software licensing cost. Due to its extensive features and specialized methodologies, it requires a significant time investment. Crucially, NVivo is a specialized analytical tool rather than an end-to-end event evaluation system. It cannot generate integrated performance reports, distribute data, create surveys, or collect data. It is fundamentally different from the proposed system's objective of providing automated, immediate operational insights from qualitative feedback to administrative staff due to its inherently manual, human-driven analytical process, which trained qualitative researchers typically employ for in-depth academic inquiry.

2.2.6 - Web-Based Event Evaluation System of Liceo de Cagayan University with Short Message Service Notification

Link:

https://asianscientificjournals.com/new/publication/index.php/aitr/article/view/1660

The "Web-Based Event Evaluation System of Liceo de Cagayan University with Short Message Service Notification" developed by David et al. (2021) illustrates the ability of digital platforms to improve event evaluation processes in an academic context. This system effectively addresses institutional needs by enabling the creation of customized evaluation forms with various question types and conditional logic, and generating reliable reports that provide key metrics and graphical summaries. The unique Short Message Service (SMS) notification feature increases user engagement by notifying respondents of new surveys or confirming submission completions. Moreover, it sustains economical operations via its online implementation.

While efficient for Liceo de Cagayan University's operational scale, the system also uncovers prospects for broader innovation. Notably, its analytical depth is largely restricted to quantitative summaries, failing to offer sophisticated capabilities for thorough qualitative data analysis or highly customizable dashboards for immediate, comprehensive administrative insights.

2.3 - Theoretical and Conceptual Framework

2.3.1 - Theoretical Framework

This section examines the frameworks and models employed to develop the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga." These theoretical foundations will guide the researchers in identifying key requirements and designing the platform's overall structure and functionality to effectively address the challenges.

2.3.1.1 - The Kirkpatrick Model

According to Andreev (2022), the Kirkpatrick Model is a globally recognized framework for evaluating the efficacy of events. Developed by Donald Kirkpatrick in the 1950s, this framework assesses event outcomes across four levels:

- **Reaction:** Emphasizes participants' immediate responses to the event. Generally assessed via post-event surveys, in which participants appraise their experience and offer constructive feedback.
- **Learning:** Evaluate whether the participants acquired knowledge, honed skills, cultivated positive attitudes, enhanced confidence, and exhibited commitment as a result of the event.
- **Behavior:** This assessment measures whether participants have implemented the knowledge and skills gained during the event in their roles or responsibilities, signifying significant behavioral modifications.

- **Results:** This section examines how the event accomplished its intended objectives, considering organizational support and accountability in realizing these outcomes.

Overall, this model provides a structured approach to evaluating event outcomes that are appropriate for enhancing event quality, increasing participant engagement, and efficiently disseminating knowledge. In this study's context, the model will serve as the foundation for creating evaluation mechanisms encompassing actionable insights at all four levels. Specifically, the system's post-event surveys will capture *Reactions*, feedback analysis and recommendations will inform *Learning* and *Behavioral* insights, and performance reports will track achievement against *Results* for institutional objectives.

2.3.1.2 - Technology Acceptance Model

The Technology Acceptance Model (TAM) is a widely known framework that explains the factors influencing user acceptance of new technologies. Developed by Fred Davis in the 1980s, the Technology Acceptance Model (TAM) was created to address issues about resistance to technology and the recurrent underachievement or failure of new systems (Dziak, 2024).

TAM proposes two key determinants of a user's intention to adopt technology:

- **Perceived Usefulness (PU):** Reflects the extent to which users consider the system to improve their capacity to evaluate events effectively and make informed decisions.

- **Perceived Ease of Use (PEOU):** Indicates the users' confidence in interacting with the system, as it will necessitate minimal effort and ensure the efficient collection, analysis, and reporting of feedback.

In the context of this study, TAM serves as a powerful tool for guiding the development of the proposed Event Evaluation System for La Verdad Christian College—Apalit, Pampanga. The study endeavors to achieve successful implementation and long-term adoption by prioritizing features that improve usability and ease of use to establish a functional and intuitive system, directly aligning with the principles of TAM.

2.3.1.3 - Software Quality Standard ISO/IEC 25010

The ISO/IEC 25000 series, also called SQuaRE (Software Quality Requirements and Evaluation), provides a globally recognized framework for evaluating software quality. At the core of this series is ISO/IEC 25010, which defines a comprehensive quality model that includes functions such as security, maintainability, reliability, usability, and performance efficiency.

To ensure that the proposed event evaluation system for La Verdad Christian College - Apalit, Pampanga, meets both technical quality standards and user adoption criteria, this study also incorporates the Technology Acceptance Model (TAM) and ISO/IEC 25010. ISO/IEC 25010 provides a comprehensive evaluation framework for the system's technical and functional performance, whereas TAM prioritizes user acceptance by assessing critical factors such as perceived usefulness and ease of use. This dual-framework approach ensures that the system is not only technically sound but also readily adopted and effectively utilized by its intended users.

2.3.2 - Conceptual Framework

The conceptual framework provides a structured foundation that ensures coherence in system development by aligning research objectives, methodologies, and anticipated outcomes. As illustrated in **Figure 2.1,** it demonstrates the interaction of inputs, processes, and outputs to address the identified problem and achieve the intended results, guiding the systematic transformation of resources into functional outcomes that enhance institutional goals and system performance.

- **Input:** The Input phase emphasizes the collection of vital resources, tools, and information for system development. Stakeholder requirements are ascertained via interviews to tackle current challenges in event evaluation, while academic literature and existing systems guide design best practices. The development integrates contemporary technologies, including Python, JavaScript, React.js, Tailwind CSS, the MERN Stack, and MongoDB, leveraging services like MongoDB Atlas, Vercel, and Render for deployment and scalable infrastructure, to establish a scalable and user-centric platform. Project management tools such as Trello facilitate task organization and progress tracking.

- **Process:** The Process phase outlines the methodologies for system enhancement, prioritizing flexibility and excellence through Agile development. The system architecture facilitates modularity, scalability, and usability, thereby guaranteeing robust functionality. Essential features encompass automated data analysis, feedback acquisition, role-specific access control, and customizable surveys. For evaluation, system dependability and user satisfaction are measured by evaluation surveys, leveraging ISO/IEC 25010 for

software quality assurance and the Technology Acceptance Model (TAM) for user involvement assessment.

- **Output:** The Output phase concludes with the provision of a fully operational event evaluation system tailored for La Verdad Christian College - Apalit, Pampanga, reflecting the thorough findings of the research and development process. The core functionalities of this system are meticulously aligned with the four tiers of the Kirkpatrick Model—Reaction, Learning, Behavior, and Results. These capabilities include issuing digital certificates, generating detailed reports, performing insightful feedback analysis, and offering robust data visualization. To ensure continuous accessibility, all evaluation reports and feedback data are meticulously archived within scalable cloud storage solutions. Furthermore, a comprehensive capstone paper thoroughly documents the research's methodology, system design, and results, thereby serving as both a significant intellectual contribution and a valuable institutional resource.

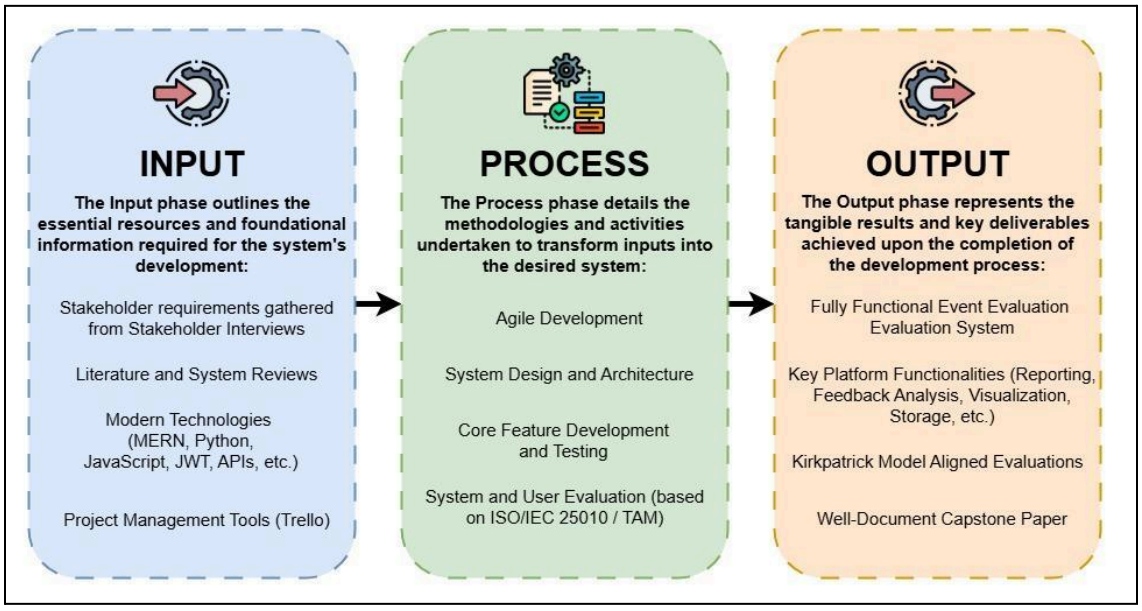


Figure 2.1: Conceptual Framework

CHAPTER 3: METHODOLOGY OF THE STUDY

This chapter defines the research methodologies and techniques employed, which are crucial for the effective development and evaluation of the proposed system. It outlines the overall methods and techniques used, encompassing the research design, respondents of the study, instruments of the study, data gathering procedures, data processing and statistical treatment, and crucial ethical considerations. The emphasis on selected methodologies and research approaches forms the foundation of the project. The identified methods and techniques are regarded appropriate for achieving the research objectives and enabling the development of the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga."

3.1 - Methods and Techniques Used

This section details the methods and techniques employed in this study, outlining the overall approach to data collection and analysis. This study employs a mixed-methods and applied research approach to systematically evaluate the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College—Apalit, Pampanga." Applied research systematically seeks to find solutions to specific problems at individual, group, or societal levels. To achieve a comprehensive evaluation, this study integrates quantitative and qualitative methodologies, ensuring a structured approach that combines statistical trends with rich stakeholder feedback to enhance both system usability and institutional adoption.

To gather insights effectively, the study will employ the following data collection methods:

- **Structured Surveys and Questionnaires:** Structured surveys and questionnaires will be utilized by the researchers to collect numerical data or comments about process perception, interaction, effectiveness, and the need for the system which will be conducted either face-to-face or online.

- **Interviews:** In the context of this study, interviews are conducted to investigate user experiences, perspectives, and perceptions, using either in-person or online modalities dependent on the convenience of the interviewees.

Upon data collection, quantitative responses will undergo statistical analysis to identify trends and relations, while qualitative data will be subjected to thematic analysis to extract key stakeholder insights and recurring patterns.

3.1.1 - Research Design

This section outlines the research design chosen to achieve the study's objectives, encompassing applied, quantitative, and qualitative methods. This study utilizes these methods to analyze the evaluation system's effectiveness and stakeholder feedback systematically. Employing reliable and valid data collection methods will enable the researchers to augment the credibility of their findings into actionable results.

3.1.1.1 - Applied Research

The foundation of this study is an applied research approach, focused on addressing the practical deficiencies of manual and current evaluation platforms by proposing and developing an event evaluation system.

This system integrates data collection, stakeholder-centric feedback analysis, and reporting capabilities customized for the institution. The project employs Agile Methodology in the development of this solution. This project management methodology prioritizes collaboration, iterative development, and adaptability to evolving requirements during the project's lifecycle. Agile emphasizes the regular delivery of functional software increments by dividing projects into smaller, more manageable units known as sprints. This methodology ensures that the development and evaluation processes of the proposed system are scalable, adaptable, and compliant with institutional requirements, making the research significantly relevant, impactful, and influential for event processes in academic environments.

3.1.1.2 - Quantitative Research

This study employs a mixed-methods approach, in which quantitative research will evaluate the effectiveness of the event evaluation system by measuring factors such as survey response rates, user engagement, processing efficiency, and feedback trends. The research seeks to derive insights relevant to a wider institutional context, enabling evidence-based enhancements inevent evaluation methodologies. Structured survey instruments will be utilized to evaluate stakeholder perceptions and system effectiveness, ensuring methodological precision. The quantitative analysis results will create a data-driven basis for system enhancements, offering a systematic and quantifiable method for improving institutional event assessments.

3.1.1.3 - Qualitative Research

The integration of qualitative research enables a thorough assessment of the proposed system, ensuring that usability, user engagement, and institutional adaptability are evaluated from both objectivity and experience. Thus, this method helps validate and reinforce statistical results while improving the overall thoroughness and reliability of the assessment process. By combining structured quantitative evaluation with qualitative exploration, the study establishes a strong foundation for future research and system enhancements, ensuring effective institutional event evaluation.

3.2 - Respondents of the Study

This section identifies the respondents crucial to this study, whose insights will be instrumental in evaluating the proposed system's usability, effectiveness, and areas for improvement to guarantee its successful implementation. The respondents of this study include individuals such as the PSAS Staff Members, MIS IT Professionals, Program-Specific Club Officers, and Students directly involved in the event evaluation and technological processes at La Verdad Christian College - Apalit, Pampanga.

3.2.1 - Population, Sample Size, Sampling Technique

3.2.1.1 - Population

The study's population consists of stakeholders who are involved in the technological processes and event evaluation at La Verdad Christian College - Apalit, Pampanga. This ensures the representativeness of feedback across a variety of viewpoints regarding institutional adoption, accessibility, and usability.

Direct Respondents:

1. **Prefect of Student Affairs and Services (PSAS) Staff Members**

   PSAS staffs primarily oversee event organization, facilitation, and administration. Their feedback is critical for evaluating the system’s efficiency, functionality, and usability, alongside identifying potential challenges in data collection, reporting, and user experience.

2. **MIS IT Professionals**

IT Professionals from the institution's MIS Department offer technical expertise. Their insights are essential for guaranteeing the system's institutional compatibility, reliability, and scalability, thereby facilitating its seamless integration into existing infrastructure and optimizing its functionality.

3. **Program-Specific Club Officers**

Program-Specific Club Officers play a central role in event planning and execution. Their unique insights are essential for evaluating the proposed system's capacity to improve participant engagement, optimize feedback collection, and enable comprehensive event assessment. Obtaining direct feedback from this respondent group ensures the platform aligns with the needs and expectations of student-led initiatives, thereby enhancing the evaluation process's adaptability and effectiveness.

4. **Students**

The proposed system is conceptually designed to include students from the Basic and Higher Education Departments of La Verdad Christian College - Apalit, Pampanga as direct respondents. Their involvement entails the active completion of evaluation forms during data collection, which provides critical insights for the assessment and refinement of the proposed system.

Institutional Reviewers:

5. **Senior Management, Assistant Principals, and Program Heads - (School Admins)**

   These individuals contribute by evaluating system reports, offering critical perspectives on the system's impact on institutional decision-making and event policies. As their involvement is restricted to report evaluation rather than usability testing, they are not formally included in this study's sampling frame.

3.2.1.2 - Sample Size

This study uses a mixed-methods sampling strategy, as outlined in Chapter 3.2.1.3, to ensure the selection of reliable respondent participants from the primary stakeholder groups involved in the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga." The sample comprises Students, Program-Specific Club Officers, PSAS Staff Members, and MIS IT Professionals, each of whom contributes valuable insights to the study's objectives.

The total population of 2,346 was analyzed using a combination of statistical calculations and targeted sampling to ensure the inclusion of essential institutional perspectives.

- **Prefect of Student Affairs and Services (PSAS) Department Staff Members:** From a total population of 25 PSAS Department Staff Members, 5 individuals will be selected for inclusion in the study. This approach is adopted to acquire targeted qualitative insights

from key personnel who are directly involved in organizing, overseeing, or evaluating student events. The selection criteria will focus on ensuring representation across various offices within the PSAS Department (e.g., student welfare, guidance) to acknowledge the distributed nature of departmental responsibilities in event evaluation. This deliberate selection aims to gather diverse and in-depth perspectives essential for understanding the system's operational and administrative aspects from experienced administrators.

- **MIS IT Professionals:** Due to the MIS Department's proficiency in system usability, technical functionality, and operational efficiency, all 5 IT Professionals will be included into the study to offer specialized technical insights.
- **Program-Specific Club Officers:** Out of a total of 89 Program-Specific Club Officers, a sample size of 14 was determined by identifying officers across different program organizations who play a direct role in their respective event evaluations and reporting.
- **Students:** From a total student population of 2,227, the minimum representative sample size required for a 5% margin of error at a 95% confidence level was determined to be 328 participants, as calculated using the Raosoft sample size calculator. The detailed methodology for the stratified and disproportionate allocation of these 328 student participants, along with the comprehensive rationale for this approach and the plan for statistical weighting during analysis to ensure overall population representativeness, is thoroughly described in the subsequent section on Chapter 3.2.1.3.

- A sample size of 100 individuals is allocated to the Basic Education Department. This allocation prioritizes feasibility and aims to maintain inclusivity in the study, recognizing the unique logistical considerations associated with surveying a larger number of younger students. These constraints include:
  - **Extensive parental consent processes:** Requiring individual approvals and follow-ups for minors, which is a time-consuming and often bureaucratic hurdle.
  - **Demanding administrative coordination:** Needing to align with multiple department heads, class schedules, and specific teachers across Pre-Kinder to Senior High School levels.
  - **Resource limitations:** Including limited researcher time and physical resources for direct, age-appropriate survey administration within classrooms. This practical sample size was determined through consultation with school administrators and a review of past institutional survey experiences, balancing research rigor with operational realities.
- For the Higher Education Department, a sample size of 228 participants is allocated as part of the total student sample of 328.

The formula for this allocation is:

$$n_h = (N_h / N) \times n$$

Where:

n_h = Sample Size for a Specific Sub-group (e.g., year level for Basic Education, program for Higher Education)

N_h = Population Size for that Specific Sub-group

N = Total Population Size of the respective stratum (i.e., 1,691 for the Basic Education Department; 536 for the Higher Education Department)

n = Total Sample Size for the respective stratum (i.e., 100 for the Basic Education Department; 228 for the Higher Education Department)

The 100 participants allocated to the Basic Education Department will be proportionally sampled across its various levels as follows:

Department Level	Total Population	Allocation
Pre-Kinder	11	1
Kindergarten	32	2
Elementary	365	22
Junior High School	777	45
Senior High School	506	30
Total:	1691	100

The 228 participants allocated to the Higher Education Department will be proportionally sampled across its various programs as follows:

Program	Total Population	Allocation
BSIS	131	56
ACT	33	14
BSA	85	36
BSAIS	46	20
BAB	137	58
BSSW	104	44
Total:	536	228

Altogether, the total breakdown of the sample size for the respondents of this study is:

Respondents	Total Population	Selected Sample Size
PSAS Staff Members	25	5
MIS IT Professionals	5	5
Program-Specific Club Officers	89	14
Students	2227	328
Total:	2346	352

3.2.1.3 - Sample Technique

To effectively gather data addressing this study's diverse objectives, a mixed-methods sampling approach is utilized. This integrates both probability and non-probability sampling methods, selected to align with the distinct characteristics and informational needs of each respondent group.

- **Purposive Sampling**

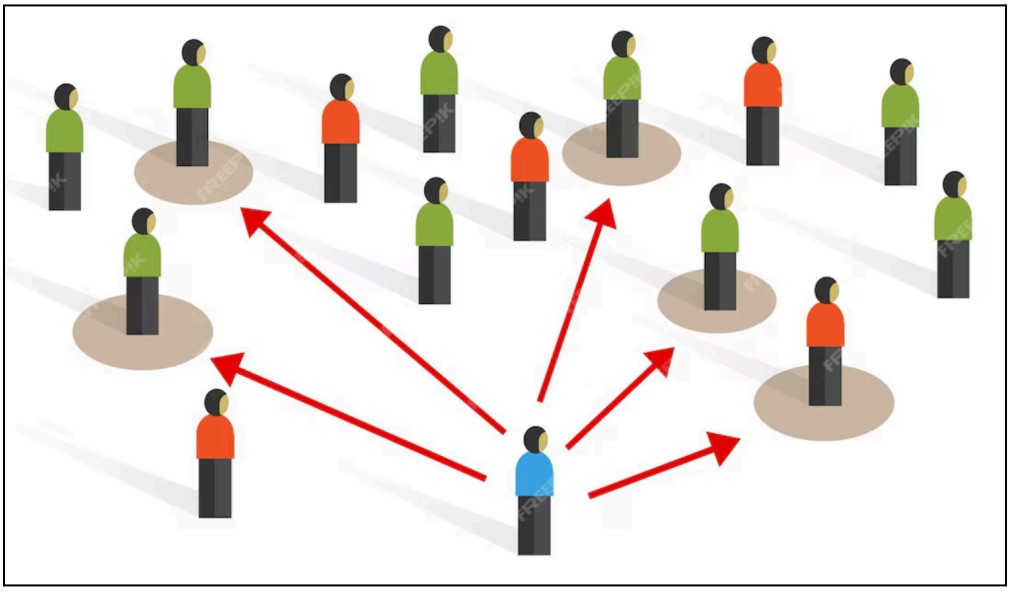
  Purposive sampling is employed for respondent groups whose particular expertise and direct engagement are essential to the study's aims.

  - **PSAS Department Staff Members:** For the PSAS Department Staff Members, purposive sampling will be utilized to select 5 key individuals from a total population of 25. Selection will be based on their direct engagement and proficiency in event evaluations. This guarantees thorough understanding of operational processes, challenges, and system requirements, illustrating the decentralized nature of these responsibilities. This methodology emphasizes comprehensive qualitative data crucial for system development.

  - **MIS IT Professionals:** Given that the MIS IT Professionals constitute a limited and highly specialized group of five individuals, total enumeration will be employed. This entails incorporating all group members in the sample to ensure that all pertinent expertise related to system usability, technical dimensions, and operational efficiency is thoroughly documented for system integration.

  - **Program-Specific Club Officers:** Purposive sampling will be utilized to select 14 officers from a total population of 89.

These individuals will be selected based on their direct participation and active engagement in their club's event assessments and reporting. This ensures that the perspectives obtained are pertinent for evaluating the proposed system's ability to improve participant engagement and facilitate feedback collection from the student organization's perspective.



Purposive Sampling

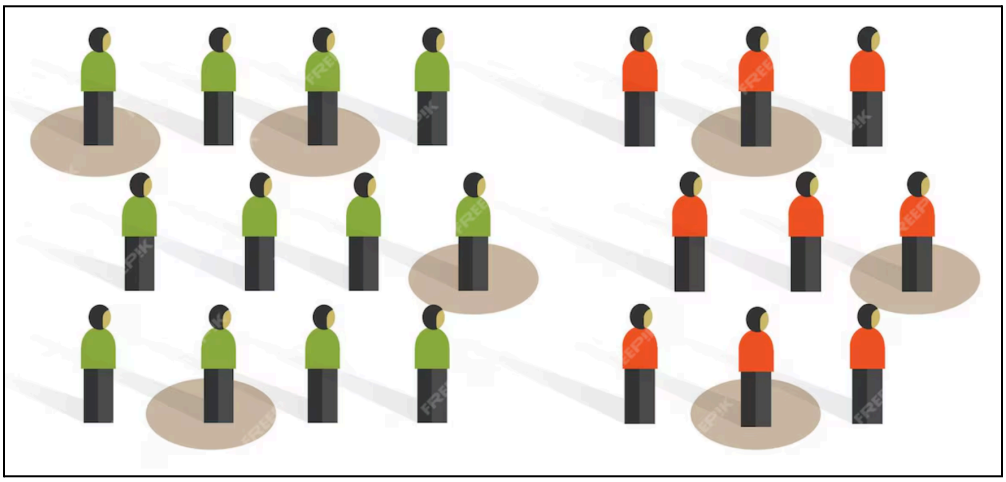
- **Stratified Random Sampling**

In contrast to the non-probability-based approach employed for other respondent groups, stratified random sampling will be utilized to ensure representativeness across distinct educational levels and academic programs within the student population. From a total student population of 2,227, the minimum representative sample size required for a 5% margin of error at a 95% confidence level was determined to be 328 participants, as calculated using the Raosoft sample size calculator.

Due to significant constraints affecting the feasibility of comprehensive surveying across all levels of the Basic Education Department, including extensive parental consent processes, demanding administrative coordination across various school levels, and resource limitations (e.g., dedicated time slots, age-appropriate survey administration), a non-proportional allocation is implemented. This strategy provides greater representation from the more accessible student population within the Higher Education Department while maintaining feasibility and inclusivity for Basic Education students.

- **Basic Education Department:** A total of 100 participants are allocated to this stratum, which involves the Preschool, Kindergarten, Elementary, Junior High School, and Senior High School levels. This figure was determined based on the data collection capabilities and practical feasibility of the researchers at these levels. Proportional allocation will be applied within this stratum to ensure fair representation from each department level each department level, and participants will be selected via random sampling.

- **Higher Education Department:** The student population within the Higher Education Department will be classified based on their academic program (e.g., ACT, BSIS, BAB, BSSW, BSA, BSAIS) and their respective year level. Proportional allocation will be employed, ensuring that the number of sampled students from each program corresponds to its relative size within the total Higher Education population. Students will be selected via simple random sampling within each program to minimize selection bias and enhance the representativeness of results for each corresponding stratum.



Stratified Random Sampling

3.3 - Instruments of the Study

To ensure alignment with institutional objectives, this study is designed to facilitate the development of the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga." This objective is achieved through a multi-method approach, which strategically combines qualitative and quantitative instruments to ensure the acquisition of comprehensive data and the production of meaningful insights.

The specific formats of the instruments employed by the researchers are mentioned as follows:

1. **Interviews**

   Semi-structured interviews were initially conducted both in person and online with key participants, specifically PSAS Department staff and program-specific club officers. These initial interviews, performed with open-ended questions, aimed to gather preliminary qualitative insights into the current event evaluation processes, identify usability challenges, and understand areas for improvement. Interviewees were prompted to expound on their experiences and viewpoints. Subsequent interviews may be undertaken later in the study to corroborate findings and obtain further insights regarding the proposed system's functionality and efficacy from these specialized personnel.

2. **Surveys and Questionnaires**

   Structured questionnaires will be the principal tool for collecting both quantitative and qualitative data from diverse stakeholder groups concerning the proposed evaluation system.

The questionnaires will be customized to gather feedback pertinent to the roles of Students, PSAS Staff, MIS IT Professionals, and Program-Specific Club Officers. The questionnaires will be predominantly conducted as online surveys to effectively gather data from a substantial population. This corresponds with the stratified sampling method, guaranteeing fair representation across various demographics for students.

The online questionnaires for PSAS staff, MIS IT professionals, and program-specific club officers will collect feedback on the system's usability and effectiveness, aligned with their specialized roles and the purposive sampling method. The questions will be progressively arranged to ensure clarity, relevance, and efficiency in data collection, encompassing items that quantitatively evaluate preferences, attitudes, and expectations (e.g., using Likert scales), as well as open-ended questions to collect qualitative comments.

3. **Documents, Articles, Journals, and Related Literatures**

A comprehensive review of relevant documents, articles, journals, books, and academic literature relevant to the proposed event evaluation system was conducted to guide the system's future development. The objective was to acquire best practices for designing assessment systems. Additionally, assessment of current systems like Google Forms, in-house institutional event assessment tools, and reporting automation tools will help identify useful automation methods, scalable functionalities, and ease-of-use improvements that can be strategically infused in the proposed system.

3.4 - Data Collection Procedures

Developing the initial phase of the proposed "Evaluation System for School and Program Events with Data-Driven Feedback Analysis and Performance Reports for La Verdad Christian College - Apalit, Pampanga" involves collecting essential information from primary stakeholders.

The researchers of this study identified inefficiencies in the PSAS Department's evaluation process and proactively endeavored to comprehend their needs, despite the lack of a formal system request by the department. To validate this necessity, this was accomplished via a systematic, two-phase interview methodology aimed at incrementally collecting information:

Phase 1: Stakeholder Interviews

This phase focused on gathering formative qualitative insights essential for initial system design and understanding stakeholder needs.

1. **Preparation**

   A compilation of targeted inquiries and principal themes were developed for the follow-up session, informed by the insights gathered from the initial interview with the PSAS Department Head - Ma'am Luckie Kristine Villanueva.

2. **Invitation Letter**

   A formal invitation letter for the interview was composed and dispatched, encompassing an introduction to the researchers, a succinct project overview, the interview's objective, the availability of both parties, and details regarding the interview format (online or in person).

3. **Conducting the Interview**

Once a convenient schedule was determined, sessions occurred in the Ma'am Luckie's preferred format. Prior to initiation, consent for audio recordings was obtained to accurately record responses. With consent secured, the entire interview session was recorded to ensure that no critical details were omitted.

4. **Post-Interview Review and Analysis**

Audio recordings from each interview session were transcribed for precision and preliminary analysis. After transcription, an internal meeting was conducted by the research team and their capstone adviser to derive critical insights from the collected data and ascertain additional information required for clarification. All audio recordings and significant informations obtained from the interview sessions are securely stored in a cloud-based folder, managed by the project's team leader. This approach guarantees the integrity of the gathered data while preserving the confidentiality of all participant information, in compliance with ethical research standards and data protection regulations.

Phase 2: System Evaluation Survey

Upon the completion of system development, this phase serves as a summative evaluation of the developed system's performance and usability. While iterative feedback loops would have occurred throughout the Agile development sprints, this formal survey assesses the system's final iteration.

The procedures are as follows:

1. **Preparation**

   A standardized survey will be administered to evaluate its performance, usability, functionality, and user satisfaction. The instrument will utilize the Technology Acceptance Model (TAM) to assess user acceptance and perceived usefulness, in conjunction with ISO 25010 to evaluate system quality. The survey will utilize a 5-point Likert scale from "Strongly Disagree" to "Strongly Agree," accompanied by open-ended questions to obtain qualitative insights. Google Forms will function as the medium for effective online dissemination and data acquisition.

2. **Approval from the Administration:** Before executing the survey, formal approval from the administration is required. The Data Privacy Office (DPO) will provide the necessary Data Privacy Agreement as a key requirement, accompanying a formal letter addressed to the administrator. This step ensures full compliance with institutional protocols and ethical standards, as comprehensively outlined in Chapter 3.6 - Ethical Considerations.

3. **Inform the Respondents**

   The survey will target the potential users of the system, comprising students, program-specific club officers, PSAS

department staff members, and MIS IT professionals at La Verdad Christian College - Apalit, Pampanga. The study's researchers will formally inform target respondents via email, messaging platforms, or class representatives. The notification will delineate the survey's purpose, assurances of privacy and confidentiality, expected duration for completion, and the importance of their participation for system enhancement. A statement of informed consent will precede the survey, elucidating that participation is voluntary and that participants will not incur consequences for withdrawing at any time.

4. **Conduct the Survey**

To gather comprehensive user feedback, a clearly defined timeframe for system utilization will be established, allowing respondents to acquire substantial hands-on experience with the system's functionalities. This period will involve structured engagement to ensure respondents adequately interact with key features relevant to their roles. Following this utilization period, the survey link will be disseminated to all eligible respondents through specific, institution-approved communication channels. The survey will be available for a predetermined period, clearly communicated to participants, with responses securely gathered digitally via Google Forms. To maximize participation and response rates, a schedule of targeted reminders will be consistently dispatched to non-respondents. Throughout this entire process, all gathered data, including survey responses, will be securely stored in a password-protected, cloud-based repository, with access strictly limited to the research team. Any personally identifiable information will be anonymized during

data processing and reporting to uphold the highest standards of confidentiality and participant privacy.

5. **Data Analysis**

Once the survey period concludes, responses will be extracted for analysis. Descriptive statistics, including weighted standard deviation and weighted mean, will be employed to analyze the quantitative data. Overall satisfaction and system performance will be evaluated by aggregating scores from TAM and ISO-based inquiries. Open-ended responses will undergo analysis and categorization to identify prevalent themes, user suggestions, or emerging concerns.

6. **Interpretation and Reporting**

The analyzed data will be interpreted according to the system's intended objectives and user requirements. Results will be presented in the capstone documentation through summary tables, charts, and graphs. The report will highlight system strengths, user satisfaction metrics, and areas requiring improvement as future development and enhancement recommendations for the system will be based on these findings.

3.5 - Data Processing and Statistical Treatment

3.5.1 - Data Processing

To demonstrate academic integrity and compliance with the institution's research standards, the researchers initially began by meeting their capstone instructor regarding appropriate interview protocols and ethical considerations. Following this consultation, formal interview letters and questions were developed under the guidance of their research adviser.

Interview letters were then disseminated to the chosen participants to coordinate interview schedules. After each interview session, audio recordings were transcribed verbatim to ensure accuracy and reliability. Transcripts were systematically arranged according to the interview questions, facilitating a methodical analytical process.

Thematic analysis identifies recurring themes, patterns, and essential insights through the following steps:

1. **Familiarization**

   Involves repeatedly reading transcript records to develop a deeper understanding of respondent feedbacks.

2. **Identification of Key Points**

   Extracting key points and insights using an inductive approach.

3. **Information Cleaning and Refinement**

   All irrelevant information are removed to maintain focus on the research objectives.

4. **Categorization of Responses**

Responses were organized into categories with similar themes to identify key patterns that needed to be used.

5. **Validation of Themes**

The themes were checked for accuracy, clarity, and consistency through a collaborative team process. The project leader initially listened to the audio recordings and reviewed the transcripts, identifying preliminary themes. These themes were then presented to all team members for discussion and collective verification. Through this team-based consensus-building approach, the researchers jointly refined and validated the identified themes, ensuring a shared understanding and reducing individual bias.

Subsequently, validated themes are consolidated into a requirements analysis document that addresses stakeholder needs and guides the system's design and development.

3.5.2 - Statistical Treatment

For the quantitative assessment of the proposed system, statistical analysis will be employed to extract significant insights from the gathered survey data, particularly from the student respondents. The primary measurement instrument for assessing user experience will be a Likert scale, specifically concentrating on Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), the two fundamental components of the Technology Acceptance Model (TAM). The evaluation will adhere to the ISO/IEC 25010 standards to ensure systematic quality assessment. Participants will utilize a 5-point Likert scale to express their level of agreement, facilitating systematic data analysis to assess the system's effectiveness.

A weighted mean will be calculated to determine the average system usability and effectiveness perceptions, particularly for findings generalized to the overall student population. This approach is primarily employed to account for the disproportionate allocation of the student sample (100 Basic Education students and 228 Higher Education students) relative to their actual population sizes. By assigning specific weights to responses from each student stratum, the weighted mean ensures that the aggregated results accurately reflect the perceptions of the entire student body, providing a more refined and precise measure of overall central tendency for system performance.

$$\bar{x}_w = \frac{\sum_{i=1}^{n} w_i x_i}{\sum_{i=1}^{n} w_i}$$

Formula for Getting the Weighted Mean

Where:

$\bar{x}_w$ **= Weighted Mean**

x_i **= Value of the i-th observation (e.g., Likert scale score for a specific item)**

w_i **= Weight assigned to the i-th observation, typically the inverse of the sampling fraction for each stratum (e.g.,** N_h **/** n_h **for student strata)**

n **= Total number of observations**

The weighted standard deviation, which measures the variability of responses around the weighted mean, will be employed to assess the consistency of user feedback regarding their perceptions of the system. A lower weighted standard deviation indicates more consistency in responses, suggesting a broader consensus, while a higher weighted standard deviation indicates greater diversity in opinion, revealing differences in personal experience with the system.

$$\sigma_w = \sqrt{\frac{\sum_{i=1}^{n} w_i (x_i - \bar{x}_w)^2}{\left(\sum_{i=1}^{n} w_i\right) - \frac{\sum_{i=1}^{n} w_i^2}{\sum_{i=1}^{n} w_i}}}$$

Formula for Getting the Weighted Standard Deviation

Where:

σ_w = Weighted Standard Deviation

x_i = Value of the i-th observation

$\bar{x_w}$ = Weighted Mean

w_i = Weight assigned to the i-th observation

n = Total number of observations (number of respondents in the sample

The results will systematically evaluate user perceptions of system usability, accessibility, and effectiveness. By analyzing weighted mean scores and response distributions, the assessment will pinpoint areas for enhancement, confirm critical system functionalities, and guarantee alignment with stakeholder expectations. These insights will enhance system features, elevate user engagement, and optimize overall performance to improve event evaluation processes within the institution.

Scale	Weighted Mean Range	Interpretation
5	4.20 - 5.00	Strongly Agree
4	3.40 - 4.19	Agree
3	2.60 - 3.39	Neutral
2	1.80 - 2.59	Disagree
1	1.00 - 1.79	Strongly Disagree

3.6 - Ethical Considerations

This section details the ethical considerations implemented by the researchers to safeguard participants' rights, dignity, and safety, while ensuring the accurate and honest reporting of data, results, methods, and procedures. These measures enhance the study's credibility, validity, and integrity, preventing ethical violations or misconduct.

1. **Adherence to Ethical Standards in Research Design**

   The preliminary stage of the study comprised interviews and consultations to guarantee ethical and professional research methodologies. Ethical principles were maintained throughout the process, despite the lack of a formal system request, to effectively evaluate stakeholder needs and confirm the necessity of the proposed assessment system.

2. **Informed Consent and Voluntary Participation**

   - Informed consent was obtained from all prospective interviewees before data collection.
   - All participants received a clear explanation of the study's objectives, system scope, expected involvement, and the significance of their feedback in event evaluation.
   - Participation was entirely voluntary, with individuals able to withdraw at any stage without repercussions.

3. **Confidentiality and Privacy Measures**

    - All gathered data, encompassing interview recordings and survey responses, were securely stored with access restricted solely to the researchers.
    - Personal identifiers were anonymized or eliminated during data processing and reporting to protect participant privacy.
    - The study implemented rigorous protocols and steps were to prevent any form of physical, emotional, or psychological distress.

4. **Institutional Compliance and Data Protection**

    - The research was executed in alignment with institutional protocols and ethical standards for academic investigation.
    - Consultation with the institution's Data Privacy Office guaranteed compliance with data protection regulations during all research activities.

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