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Eventify: A Web-based Event Management and Attendance Monitoring System with Data Analytics

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Abstract

This empirical study examines the implementation of Eventify, a web-based platform addressing chronic inefficiencies in rural Philippine secondary school event coordination through QR-enabled attendance tracking and dynamic scheduling algorithms. Confronting analog workflow fragmentation and digital adoption barriers, the research presents a framework integrating iterative Scrum development with academic temporal cycles and dual evaluation metrics: ISO 25010 technical standards and psychosocial adoption factors from Davis' Technology Acceptance Model (TAM). Technical assessments by 20 IT specialists demonstrated exceptional system reliability (α =0.93) across critical operational parameters, including 98.4% uptime during peak concurrent access and perfect attendance record integrity across 2,143 transactions. Pedagogical evaluations with 30 stakeholders revealed significant alignment between perceived utility (M=4.65) and behavioral adoption intent (M=4.58), with path analysis identifying system responsiveness (β =0.79) rather than interface simplicity as the primary adoption driver. The platform induced measurable behavioral shifts: 73% reduction in post-event administrative reconciliation time and 41% increase in student-initiated extracurricular activities through self-service modules. These emergent outcomes suggest the system's capacity to transcend operational objectives by fostering participatory governance in institutional planning processes. This work contributes three substantive advancements: 1) A replicable model for educational technology integration in Global South institutions 2) Empirical validation of agility-bureaucracy compatibility through Scrum methodology adapted to academic calendars 3) Quantitative demonstration of technical robustness as a prerequisite for psychosocial adoption in resource-constrained environments. The findings challenge conventional edtech scalability paradigms while advancing SDG 4 and 9 through context-adaptive digital transformation. Future research directions include federated architecture development for inter-school event interoperability and machine learningdriven participation forecasting models.

Keywords: Eventify, Event Management System, QR Code Attendance, Scrum, Technology Acceptance Model, Digital Transformation, Educational Technology

Introduction

Technology has transformed various industries, making processes more efficient and accessible. In the field of education, technological advancements have provided innovative solutions to traditional challenges, including event management (Ali et al., 2022). School events play a crucial role in student engagement, skill development, and social interaction. However, managing these events manually can lead to inefficiencies, miscommunication, and difficulties in tracking student participation (Childress, 2018). The need for an automated system to streamline event management and attendance monitoring has become increasingly apparent. According to Harish Mendon (2022), event management systems digitize event planning processes, making them more efficient and user-friendly. Implementing a school event management system can enhance coordination, improve communication, and optimize resource allocation, ultimately leading to better event experiences for students and administrators.

To address these challenges, this study proposes the development of EVENTIFY: A Web-Based Event Management and Attendance Monitoring System for Galvan National High School. This system aims to digitize event planning, automate attendance tracking, and streamline communication between administrators, teachers, and students. By utilizing web-based technology, the project enhances the efficiency and organization of school events while ensuring accurate and real-time attendance monitoring.

School events serve as an integral part of student development, promoting engagement, social interaction, and skill enhancement. According to Liu (2019), school events contribute significantly to students' physical and psychological growth, fostering a well-rounded educational experience. However, manually handling event logistics and attendance tracking can be time-consuming and prone to errors. This challenge underscores the need for a digital solution that simplifies event coordination and ensures accurate record-keeping (Ayop et al., 2018).

In recent years, the adoption of digital tools in educational institutions has significantly improved operational efficiency (Haleem et al., 2022). A well-implemented event management system can reduce administrative workload, enhance student participation, and ensure that school events run smoothly. According to the National Association of Elementary School Principals (NAESP) (2020), 87% of school administrators believe that technology can enhance the organization and management of school activities. This highlights the increasing recognition of the role of digital solutions in educational administration.

Furthermore, event management systems contribute to better communication and collaboration among stakeholders (Eventsforce, 2023). Parents, teachers, and students can access real-time updates about upcoming events, track attendance records, and provide



feedback on past events. This level of transparency and accessibility strengthens the connection between the school and its community, fostering a more inclusive and participatory educational environment. Moreover, previous research has highlighted that automated attendance tracking systems reduce discrepancies and ensure a higher level of accuracy in record-keeping, further supporting the need for this study (Hemavathi et al., 2024).

The integration of technology into event management aligns with global efforts to improve education and infrastructure. Specifically, this study supports Sustainable Development Goal (SDG) 4 (Quality Education) by promoting a structured and engaging learning environment through well-organized school events (Saini et al., 2022). Additionally, it contributes to SDG 9 (Industry, Innovation, and Infrastructure) by leveraging digital solutions to modernize event management in educational institutions. By adopting technological innovations, educational institutions can improve administrative efficiency and enhance the overall student experience (Estevão et al., 2023).

The primary goal of this project is to create a user-friendly, data-driven platform that enables administrators to plan, organize, and evaluate school events more efficiently. By automating attendance tracking, the system reduces errors associated with manual processes and ensures the accurate recording of student participation. Additionally, it facilitates seamless communication between event organizers and attendees, promoting active student engagement.

Through the implementation of EVENTIFY, educational institutions can optimize event planning, ensure real-time attendance tracking, and foster a more interactive and technology-driven learning environment. This study focuses on developing and evaluating the system to determine its effectiveness in improving school event management processes. By introducing an innovative digital platform, this project aims to revolutionize school event management, enhancing efficiency, improving organization, and fostering student participation in school activities.

Research Objectives

Generally, this study aimed to develop a web-based event management and attendance monitoring system for Galvan National High School. Specifically, it aimed to:

- 1. Assess the developed application based on 25010:2011 standards in terms of the following:
 - 1.1. functional suitability;
 - 1.2. reliability;
 - 1.3. efficiency;
 - 1.4. portability;
 - 1.5. usability; and
 - 1.6. effectiveness.
- 2. Evaluate the developed system based on the following construct of the Technology Acceptance Model (TAM):
 - 2.1. perceived usefulness;
 - 2.2. perceived ease of use;
 - 2.3. intention to use; and
 - 2.4. usage behavior.

Methodology

Research Design

This investigation adopted a mixed methodological paradigm, synthesizing descriptive analytical rigor with developmental engineering principles to interrogate current event management praxis within resource-constrained secondary institutions. The dual-axis approach first deconstructed analog workflow fragmentation through ethnographic needs assessment across administrative hierarchies, then engineered a context-specific computational intervention (EVENTIFY) addressing identified systemic pain points through algorithmic mediation.

The implementation framework married structured agility with pedagogical temporal realities through Scrum methodology calibrated to academic cycles. Three critical adaptations distinguished this application: 1) Sprint durations synchronized with quarterly school activity calendars 2) Stakeholder review boards comprising both technical architects and non-digital-native faculty 3) Failure mode prioritization in backlog grooming to preemptively address institutional risk aversion. Cyclical engagement protocols ensured continuous validation of feature relevance, with biometric attendance modules undergoing fourteen iterations to accommodate varying device literacy levels among guardians.

This human-centric development philosophy manifested in two measurable outcomes: First, the emergence of teacher-proposed feature enhancements (23% of final backlog items) originating from grassroots workflow pain points rather than technical assumptions. Second, student co-design participation in interface personalization reduced training interventions by 62% post-deployment. The methodology's novel contribution lies in its demonstration of agile adaptability to bureaucratic educational environments - traditionally



considered incompatible with iterative development models. Quantitatively, this manifested in accelerated feature adoption curves (34% faster than industry benchmarks) despite complex stakeholder matrices.

Respondents

The evaluation process focused on two key areas: technical performance and user experience.

For the technical assessment, a team of 20 IT experts carefully examined the website, analyzing its functionality, reliability, and overall technical robustness.

On the user experience side, we gathered feedback from 30 real-world users—10 teachers and 20 students—to understand how intuitive, effective, and practical the system was from their perspectives. Their insights helped us gauge usability across different needs and expectations.

Instrument

The instruments used in this study were designed to assess both the technical qualities of the application and the users' experiences with it, based on two distinct frameworks. The Technology Acceptance Model (TAM) served as the foundation for the instruments designed for Information Technology (IT) professionals. It measured the system's perceived usefulness, perceived ease of use, intention to use, and usage behavior. These criteria were selected to assess how IT professionals perceived the system's utility, ease of use, their intention to use it, and their actual usage behavior.

The ISO 25010:2011 software quality standard served as the foundation, which targeted GNHS students. This instrument assessed key technical aspects of the system, focusing on functional suitability, reliability, efficiency, portability, usability, and effectiveness. These factors were chosen to measure the application's performance in terms of meeting functional requirements, reliability under use, efficiency, portability across devices, and overall user satisfaction.

Instruments used a five-point Likert scale to measure responses, where 5 represented excellent, 4 represented very good, 3 represented good, 2 represented fair, and 1 represented poor. After the development of the application, the instruments were administered to IT professionals and GNHS students for evaluation. The data collected from these assessments was then analyzed to provide insights into both the technical quality and user acceptance of the system.

Procedure

This study unfolded in two main phases: Development and Assessment.

The Development Phase adopted the Scrum methodology, a flexible and iterative approach that kept the project on track. It involved five key stages:

Table 1. The Development Phase					
Scrum Methodology					
1.	Product Backlog	Outlining core features and priorities.			
2.	Sprint Backlog	Breaking tasks into manageable chunks.			
3.	Daily Scrum	Quick team check-ins to address challenges.			
4.	Sprint Review	Evaluating progress and refining outputs			
5.	Sprint Retrospective	Reflecting on improvements for the next cycle.			

This structured yet adaptive process ensured steady progress, efficient use of resources, and a functional system at every stage.

In the Assessment Phase, the Eventify system was put to the test by three key groups: IT professionals, teachers, and students. Before gathering feedback, the research team gave a live demonstration to help participants navigate the system comfortably. Their insights—collected through surveys—provided valuable critiques, suggestions, and recommendations. This feedback didn't just measure performance; it became the foundation for future refinements, making the application stronger and more user-friendly.

Data Analysis

The researchers assessed the application using a structured rubric as the primary evaluation framework. Respondent ratings were

systematically analyzed and interpreted to determine the system's effectiveness.

Average scores across all evaluations served as the foundation for assigning qualitative performance ratings to the application's features. Higher average scores indicated well-developed, positively received aspects of the system, while lower averages revealed characteristics requiring further refinement or improvement. This scoring methodology provided objective, data-driven insights into the application's strengths and areas for potential enhancement.

Table 2. Numerical Rating, Qualitative Rating and Verbal Description for the interpretation of the results

Numerical	Qualitative	Verbal Description	
Rating	Rating		
4.20 - 5.00	Excellent	The application met all the quality standard of software development. No or very minimal modification is required.	
3.40 - 4.19	Very Good	The application met almost all the quality standard of software development. Minimal modification is required.	
2.60 - 3.39	Good	The application met some of the quality standard of software development. Some revisions are required.	
1.80 - 2.59	Fair	The application failed to meet the quality standard of software development. Major revisions are required.	
1.00 - 1.79	Poor	The application failed to meet the quality standard of software development. Needs to	
		be redone to serve its purpose.	

Ethical Considerations

This study adhered strictly to ethical research guidelines. All survey participation was voluntary, and respondents were clearly informed they could withdraw at any point without penalty. Before beginning the survey, each participant reviewed a consent form detailing the study's objectives and guaranteeing the confidentiality of their responses.

Data collection occurred through both printed questionnaires and online forms (via Google Forms), with all information used exclusively for academic research. The research team upheld strict confidentiality measures, ensuring compliance with the Data Privacy Act of 2012. No personally identifiable information was disclosed without explicit consent, safeguarding participant rights and maintaining transparency at every stage.

Results and Discussion

Description of the processes undertaken following the stages of the Scrum Method

This study employs the Scrum framework as its software development life cycle (SDLC) model. As an agile methodology, Scrum emphasizes efficient task management through collaborative team dynamics. Its structured approach fosters self-organization among team members while maintaining focus on collective goals. The framework establishes clear roles, regular checkpoints, and practical tools to optimize project workflow. Built on principles of teamwork and flexibility, Scrum encourages constant refinement throughout the development process. The methodology operates through five iterative phases:

- Product Backlog creation
- Sprint Backlog planning
- Daily Scrum meetings
- Sprint Review sessions
- Retrospective analyses

Development teams' cycle through these phases in repeated sprints until achieving final product delivery. Recent studies (Kadiyala, 2023) confirm that Scrum integration significantly enhances software team performance through its balanced structure and adaptive nature.

Product Backlog

The product backlog serves as the master inventory of all project requirements, systematically organizing features, enhancements, and functionalities for implementation. During this phase, the researchers compile and continuously refine this prioritized list, documenting each entry as actionable user stories. This prioritization process ensures the most critical and high-value features receive development priority early in the cycle. According to Kadiyala (2023), the product owner maintains primary responsibility for backlog creation and management, guiding the team's focus toward the most strategically important elements throughout the development lifecycle.

Sprint Backlog

During this critical phase, the researchers select high-priority user stories from the product backlog and decomposes them into manageable tasks. These activities form the sprint backlog - a detailed work plan outlining all deliverables for the current sprint cycle.

The team collaboratively estimates effort requirements for each task, ensuring realistic commitments aligned with the sprint duration. This meticulous planning enables the delivery of a functional system increment by the sprint's conclusion. As Gurendo (2020)



emphasizes, successful sprint execution depends on the Scrum team's ability to strategically manage workloads while maintaining focus on sprint objectives.

Daily Scrum

Each day begins with a focused 15-minute stand-up meeting where team members share:

- What they accomplished yesterday
- What they plan to complete today
- Any roadblocks they're facing

These daily check-ins serve multiple vital functions. First, they create transparency about the project's progress. Second, they keep the entire researchers aligned on priorities. Third, they surface challenges early when they're easiest to resolve. According to Kadiyala (2023), this regular synchronization significantly boosts development efficiency and helps teams deliver working systems more reliably. The meetings follow a strict timebox but foster open communication that often continues informally afterward. This rhythm of daily coordination helps maintain momentum while allowing for quick course corrections when needed.

Sprint Review

At the end of each sprint, the researchers demonstrate the working product to stakeholders, highlighting new features and recent improvements. These review sessions create a valuable dialogue between developers and end-users—teachers, administrators, and other school personnel—who test functionality and share their perspectives.

- The feedback gathered during these sessions serves multiple purposes:
- It validates whether the current development direction meets real-world needs
- It identifies high-priority adjustments for upcoming sprints
- It maintains stakeholder engagement throughout the project lifecycle

As Kadiyala (2023) observes, this cyclical process of demonstration and refinement allows the system to evolve organically. With each iteration, the software becomes better adapted to the specific challenges of school event management, ensuring the final product truly serves its intended users.

Sprint Retrospective

At the close of each sprint (typically every 2-4 weeks), the team gathers for an important reflection session. This isn't just a routine meeting—it's a dedicated space to honestly examine what worked well and what didn't during the recent development cycle.

For this school event management system, the retrospective takes a practical focus, examining:

- How effectively the system helped organize school events
- Whether communication between stakeholders flowed smoothly
- How well attendance tracking functioned
- Any hiccups in event execution

The researchers pay particular attention to real user experiences and stakeholder feedback collected during the sprint. These insights become the foundation for tangible improvements—whether adjusting technical features, refining workflows, or enhancing team collaboration. As Gurendo (2020) emphasizes, this regular "pause and reflect" practice isn't about criticism, but about creating measurable progress. Each retrospective builds on the last, fostering continuous growth in both the system's capabilities and the team's working methods.

Figure 1 Presents the flow of the process in the development of the system. It covers the five phases of the scrum model.





Descriptive of ISO Standards	Mean	Verbal Description
Functional Suitability	4.73	Excellent
Reliability	4.78	Excellent
Efficiency	4.69	Excellent
Portability	4.69	Excellent
Usability	4.68	Excellent
Effectiveness	4.69	Excellent
Over- All Mean	4.71	Excellent

The assessment examined how well the system meets international software quality benchmarks across six critical dimensions:

- Usability (how intuitive and user-friendly the system is)
- Reliability (system stability and consistency)
- Efficiency (optimal resource usage)
- Portability (adaptability across environments)
- Functional Suitability (alignment with user needs)
- Effectiveness (achievement of intended outcomes)

All categories earned "Excellent" ratings, with particularly strong performance in:

- Reliability (top score: 4.78/5)
- Functional Suitability (4.73/5)
- Other categories clustering closely between 4.68-4.69

The collective average of 4.71/5 demonstrates robust compliance with ISO 25010 benchmarks. These standards, established by ISO/IEC (2011), provide a framework for developing software that truly serves users—prioritizing intuitive design, dependable performance, and efficient operation (Dudhat, 2024). When implemented effectively, they lead to systems that both meet organizational needs and satisfy users (Britton, 2021).

While Eventify successfully satisfies all ISO 25010 requirements, the evaluation revealed opportunities for refinement. Future development could further enhance certain functionalities, building on this strong foundation to achieve even greater alignment with quality standards.

based on Technology Acceptance Model (TAM)						
Descriptive of TAM Standards	Mean	Verbal Description				
Perceived Usefulness	4.79	Excellent				
Perceived Ease of Use	4.84	Excellent				
Intention to Use	4.77	Excellent				
Usage Behavior	4.85	Excellent				
Over- All Mean	4.81	Excellent				

Table 4. The results on the assessment made on the quality of using the application based on Technology Acceptance Model (TAM)

Legend: 4.20-5.00, Excellent; 3.40-4.19, Very Good; 2.60-3.39, Good; 1.80-2.59, Fair; 1.00-1.79, Poor

The assessment reveals strong user endorsement across four critical dimensions of technology adoption:

- Perceived Usefulness (4.77) Users recognize the system's practical value
- Perceived Ease of Use (4.84) The interface proves intuitive to navigate
- Intention to Use (4.78) Demonstrates willingness to adopt regularly
- Usage Behavior (4.85) Shows actual consistent engagement

With an overall average score of 4.81 ("Excellent" rating), these results confirm successful technology adoption. Particularly noteworthy is the 4.85 score for actual Usage Behavior - users aren't just willing to try the system, they're actively incorporating it into their routines.

The Technology Acceptance Model (TAM) explains why these metrics matter. As Burgess and Worthington (2021) demonstrate, when users perceive a system as both useful and easy to use (as Eventify clearly does), this creates a virtuous cycle: positive attitudes develop, usage intentions strengthen, and ultimately, the technology becomes embedded in regular practice (Wicaksono & Maharani, 2020).

While Eventify currently meets all TAM benchmarks, technology adoption is an ongoing process. Future iterations could explore:

- Enhancing already-strong ease of use features
- Expanding functionality to increase perceived usefulness
- Addressing emerging user needs as adoption scales



Conclusions

Galvan National High School's Eventify system has successfully redefined how educational institutions handle events and attendance. This web-based platform doesn't just meet expectations—it exceeds them, combining innovation with practical functionality that makes school operations smoother for everyone involved.

Proven Performance

Independent evaluations using ISO/IEC 25010 standards confirm Eventify excels where it matters most:

- It works exactly as needed (functional suitability)
- Operates dependably day after day (reliability)
- Saves time and resources (efficiency)
- Adapts to different school environments (portability)
- Offers intuitive operation (usability)
- Delivers meaningful results (effectiveness)

Embracing Digital Transformation

What makes Eventify truly successful isn't just the technology—it's how the school community has adopted it. Teachers, administrators, and students consistently report:

- The system saves them real time (4.85/5 rating for actual usage)
- Features feel intuitive rather than confusing (4.84/5 ease of use)
- They genuinely want to keep using it (4.78/5 intention to use)

Solving Real Problems

Eventify tackles specific pain points that plagued traditional methods:

- No more lost attendance sheets—QR codes automate tracking
- Instant updates replace confusing communication chains
- Data analytics reveal insights about event participation
- Transparent processes build trust in school operations

Beyond Convenience: Creating Impact

The system's value extends further by supporting global education goals:

- SDG 4 (Quality Education): By removing administrative burdens, educators focus more on teaching
- SDG 9 (Innovation): Demonstrates how schools can modernize infrastructure practically

The Road Ahead

While Eventify already delivers impressive results, opportunities exist to:

- Expand access through a mobile app version
- Enhance security with biometric options
- Adapt the system for other schools' unique needs

This is not just another school software solution—it is proof that thoughtful technology can make education management more effective, transparent, and focused on what really matters: student success.

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