



Implementation of a Web-Based Online Registration System for Extracurricular Activities at State Vocational School 72 Jakarta

Francis Matheos Sarimole ^{1*}, Mesra Betty Yel ², Salabila Listania Iqhlima ³, Bagas Maulana Sidiq ⁴, Siti Nur Hidayati ⁵, Chelvyn Erikson Bere Tae ⁶

^{1*,2,3,4,5,6} Informatics Engineering Department, Sekolah Tinggi Ilmu Komputer Cipta Karya Informatika, East Jakarta City, Special Capital Region of Jakarta, Indonesia.

Corresponding Email: matheosfrancis.s@gmail.com ^{1*}

Article History:

Received: 10 February 2026; Revised: 18 February 2026; Accepted: 25 February 2026; Published: 1 March 2026.

Abstract

This study proposes a web-based extracurricular registration system to improve the effectiveness of student activity management at SMK Negeri 72 Jakarta. Currently, the extracurricular registration process is still conducted manually using paper forms, which often causes problems such as slow data processing, data recording errors, limited information access, and ineffective promotion of activities. To address these issues, this research designs a digital registration platform that allows students to view extracurricular information, register online, and monitor registration status easily. The system also provides administrative features for managing extracurricular data, validating student registrations, organizing schedules, and generating reports. Two main user roles are implemented, namely students and administrators. The proposed system is expected to support a faster, more accurate, and more transparent registration process. By adopting this web-based approach, the school can reduce administrative workload, improve service quality, and enhance student participation in extracurricular programs. The proposed system is therefore considered beneficial in supporting school digital transformation and student development activities.

Keywords: Web-Based System; Extracurricular Registration; Student Management; School Administration; Online Registration; Information System.



1. Introduction

The use of information technology in education has reshaped how institutions manage their internal processes. Schools have adopted various digital tools – from online examination systems to student enrollment platforms – to keep pace with growing administrative demands. Yet despite this broader shift, many schools still lack a dedicated system for managing extracurricular activities. This gap is worth examining. Extracurricular activities are not peripheral to education; they are formally recognized as curricular activities conducted outside regular class hours, aimed at developing students' potential, talents, interests, abilities, personality, cooperation, and independence, as stipulated in the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 62 of 2014 (Kemendikdasmen, 2014). Through structured programs in sports, arts, or other organized activities, students develop organizational skills, problem-solving abilities, and social competence that classroom instruction alone cannot fully provide (Aspari & Maulana, 2023). At SMK Negeri 72 Jakarta, extracurricular programs are expected to serve exactly this purpose – supporting students in developing their potential in ways that reinforce, rather than distract from, their academic growth (Maulana & Sidik, 2022).

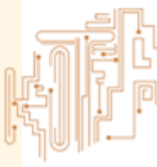
The problem, however, lies in how access to these programs is managed. At present, the registration process at SMK Negeri 72 Jakarta is still conducted manually through paper-based forms. Data must be compiled by hand, activity promotion relies on verbal announcements, and there is no centralized record of who has registered for what. The consequences are predictable: slow processing, frequent recording errors, and uneven distribution of information that leaves some students unaware of available programs. When registration is inconvenient or unclear, participation drops – not because students lack interest, but because the process itself becomes a barrier. This is the core issue that this research addresses. A web-based registration system allows students to register at any time without being physically present, while giving administrators a single platform to manage participant data, update schedules, and distribute program information. The goal is not simply to digitize a paper form, but to build a system that makes extracurricular participation genuinely accessible and administratively manageable for everyone involved.

2. Theoretical Framework

This chapter presents the theoretical framework and literature review that form the foundation of this research, structured into four subsections: the theoretical model guiding the study, a review of prior work on web-based registration systems in educational institutions, literature on extracurricular management and Agile development, and the identification of the research gap with a clear rationale for this study.

2.1 Theoretical Framework

The Technology Acceptance Model (TAM), developed by Fred D. Davis in 1989, serves as the primary theoretical lens for this research. TAM was built on a straightforward observation: many organizations invested heavily in new information systems, only to watch adoption rates fall flat. The problem was rarely



the technology itself – it was that users did not believe the system was worth using, or found it too difficult to bother with. Davis (1989) formalized this into two constructs. Perceived Usefulness (PU) captures whether a user believes the system will actually improve their performance. Perceived Ease of Use (PEOU) captures whether they believe operating it will demand unreasonable effort. In this study, PU means students expecting faster registration, clearer activity information, and fewer mistakes – and administrators expecting cleaner data records, easier schedule management, and less time spent on paperwork. PEOU means students being able to select an activity, fill out a form, and receive confirmation without needing a tutorial, and administrators being able to pull a participant report without calling the IT department.

The relationship between these constructs follows a logical chain. PEOU influences PU – if a system is genuinely easy to use, people are more likely to see it as worth using. Both then shape Behavioral Intention to Use (BI), which predicts Actual Use. For this study, that chain matters because a web-based registration system only solves the problems at SMK Negeri 72 Jakarta if students and administrators actually use it. A system that sits unused because it feels complicated or pointless is not a solution – it is a more expensive version of the original problem. TAM provides the analytical structure to evaluate whether the proposed system clears that bar. Recent studies across the past five to seven years continue to validate TAM in educational technology research, with perceived usefulness consistently emerging as the strongest predictor of adoption intention. TAM is also paired here with Agile development: while TAM identifies what drives acceptance, Agile shapes how the system is built to meet those expectations. Each development sprint – where interface design and features are tested and refined based on user feedback – directly addresses PEOU and PU before the final system is deployed. The conceptual framework mapping these relationships, including system quality and information quality as supporting variables, is presented in Figure 1.

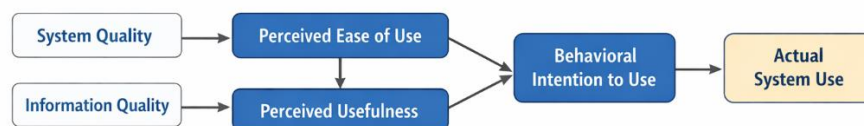


Figure 1. Conceptual framework of user acceptance for a web-based extracurricular registration system

2.2 Web-Based Online Registration Systems in Educational Institutions

Web-based registration systems have become a standard part of school and university administration, used for everything from enrollment to academic service requests. For this study, the relevant application is narrower: a platform where students register for extracurricular activities and administrators manage that process digitally. The literature on such systems is consistent on several points. Manual registration is slow, error-prone, and difficult to scale. When a school runs ten or fifteen extracurricular programs at once, managing paper forms across all of them creates a coordination problem that grows with every new participant. Digital systems address this by automating data entry, enforcing input validation, and storing records in a searchable, retrievable format. Registration numbers and timestamps are assigned automatically. Required fields cannot be skipped. Duplicate entries are flagged rather than silently accepted. For extracurricular



management – where accurate records feed into attendance tracking, coaching decisions, and program evaluation – that reliability is not a bonus feature. It is the baseline.

Accessibility matters too, and the literature treats it as more than a convenience argument. When students can register from their phones at any time rather than tracking down a coordinator during school hours, participation rates tend to rise. The barrier is lower, so more students clear it. Online platforms also allow programs to be described in detail – schedules, requirements, supervising teachers, available slots – which gives students enough information to make a genuine choice rather than a guess. That said, the literature is honest about the difficulties. Uneven digital literacy among staff, inconsistent internet access, and the need for mobile-responsive design are problems that appear repeatedly across studies. Data privacy is another concern that cannot be treated as an afterthought. More recent research has shifted away from purely technical evaluation toward user-centered design and acceptance modeling, with TAM and the DeLone and McLean IS Success Model appearing frequently as evaluative tools. The implication is clear: a system's value is measured not by what it can do, but by whether people use it.

2.3 Extracurricular Management and Agile Development for Educational Web Systems

Extracurricular activities are not supplementary to education – they are where a different kind of learning happens. Research across multiple school settings shows that students who participate in structured extracurricular programs develop stronger social skills, better self-discipline, and more confidence in group settings than those who do not. In vocational schools specifically, these outcomes carry direct weight: employers consistently cite soft skills – communication, teamwork, initiative – as factors that distinguish job-ready graduates from those who are technically trained but professionally underprepared. Managing extracurricular programs well is therefore an institutional responsibility, not just an administrative task. Yet in many schools, that management still runs on paper. Registration is done by hand, attendance is tracked informally, and schedule coordination depends on whoever happens to be responsible that semester. When that person changes, institutional knowledge walks out the door with them. Digital systems for extracurricular management – covering registration, attendance, scheduling, and reporting – have been studied in various school settings, and the findings are consistent: transparency goes up, administrative load goes down, and program coordinators gain the ability to monitor participation and enforce capacity limits without manual cross-checking.

Agile development fits this environment well, and not just because it is fashionable. School systems are built for users whose needs are often unclear at the start and become visible only through use. A student might not know that the registration confirmation page is confusing until they try to use it. An administrator might not realize they need a bulk export function until they are manually copying data into a spreadsheet for the third time. Agile accommodates this by building in small increments, testing each one with real users, and revising before moving forward. Unlike Waterfall development – which commits to a full specification upfront and delivers a finished product at the end – Agile treats early feedback as part of the process rather than a sign that the plan was wrong. Several studies on Agile-developed educational systems report higher usability outcomes precisely



because problems are caught and fixed during development rather than after deployment. The approach is not without demands: it requires consistent stakeholder involvement and disciplined sprint management. But when those conditions are met, the result is a system that reflects how users actually work rather than how developers assumed they would. In this study, Agile and TAM operate in tandem – one shaping the build process, the other providing the criteria by which the outcome is judged.

2.4 Research Gap and Study Rationale

The literature reviewed here makes a strong collective case for digital registration systems in education. The benefits are well-documented, the theoretical tools for evaluating adoption are established, and the development approaches for building user-responsive systems are available. What is missing is research that brings all of this together in the specific setting of extracurricular registration at a vocational secondary school. Most studies on web-based registration address general enrollment or university-level academic services. Studies that focus specifically on extracurricular registration are fewer, and those set in vocational high schools are rarer still. More critically, many system development studies stop at the technical layer – they document what was built without examining whether users actually adopted it or why. That omission matters. A registration system that students avoid because it feels unfamiliar, or that administrators bypass because it adds steps rather than removing them, does not improve participation rates or reduce administrative burden. It just adds a line to the school's IT inventory. This study addresses that gap directly. A web-based extracurricular registration system is developed for SMK Negeri 72 Jakarta using Agile development, and its reception is evaluated through TAM – examining how perceived usefulness and perceived ease of use shape actual adoption among students and administrators. The theoretical contribution is an application of TAM to a domain where it has rarely been tested: extracurricular systems in vocational schools. The practical contribution is a working platform that reduces manual workload, improves record accuracy, and makes program information genuinely accessible to students. For a vocational school where what students do outside the classroom shapes who they become as workers, getting that access right is not a minor administrative improvement. It is the whole point.

3. Methodology

This research adopts the Agile method as its development approach. Agile is a flexible, iterative approach to software development that prioritizes team collaboration, responsiveness to changing requirements, and the continuous delivery of working software in incremental stages. Rather than committing to a fixed plan from the outset, Agile treats development as an ongoing process of building, testing, and refining based on real feedback.

3.1 Agile Principles

Agile is grounded in four core values set out in the Agile Manifesto. First, individuals and interactions take precedence over processes and tools – meaning that communication and collaboration within the team carry more weight than rigid procedural compliance. Second, working software is prioritized over exhaustive



documentation; the measure of progress is a system that functions and delivers real value to users, not a stack of specification documents. Third, customer collaboration is valued over contract negotiation, which means users and stakeholders are actively involved throughout development rather than consulted only at the beginning and end. Fourth, responding to change is considered more productive than following a plan that no longer reflects reality – a principle that is particularly relevant in school environments where user needs often shift once actual testing begins.

3.2 Methods and Practices in Agile

Agile is put into practice through several distinct frameworks, each with its own structure and emphasis. The three most widely used are Scrum, Kanban, and Extreme Programming (XP). Scrum organizes development into fixed-length cycles called sprints, typically lasting two to four weeks. Each sprint begins with Sprint Planning to define the work to be completed, proceeds through Daily Scrum meetings to track progress, and closes with a Sprint Review and Sprint Retrospective to assess both the output and the process. Kanban takes a different approach – rather than working in sprints, it manages tasks as a continuous flow, with work items pulled based on team capacity and priority. This makes Kanban better suited to projects where requirements shift frequently or where tasks arrive at irregular intervals. Extreme Programming (XP) places its emphasis on code quality and rapid feedback. Automated testing is run on every code change, and practices such as pair programming and continuous integration are used to catch problems early and maintain a stable codebase throughout development.



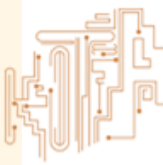
Figure 2. Agile Method.

4. Results and Discussion

4.1 Results

4.1.1 Current System Condition

At SMK Negeri 72 Jakarta, the extracurricular registration process is still carried out manually using paper forms. Participant data must be compiled by hand, activity information is communicated verbally or through face-to-face



announcements, and there is no centralized record of who has registered for which program. This creates four recurring problems. Data management is slow – summarizing registration forms across multiple activities takes considerable time and delays the entire process. Recording errors are frequent, stemming from illegible handwriting, incomplete submissions, and duplicate entries that are difficult to catch without a systematic check. Promotion of extracurricular activities is uneven, since verbal announcements do not reach all students equally, leaving some unaware of programs they might otherwise join. Monitoring is also difficult – administrators have no quick way to check participant numbers, registration status, or activity schedules without manually reviewing physical records. Taken together, these conditions do not just create administrative inconvenience; they actively reduce student participation by making the registration process harder than it needs to be.

4.1.2 Proposed Web-Based System

To address these conditions, this research proposes a web-based extracurricular registration system accessible to two user groups: students, who use the system to register for activities, and administrators, who use it to manage data and oversee the registration process. The system is designed so that the entire registration workflow – from browsing available programs to confirming participation – is handled digitally. On the student side, users log in through an assigned account and can browse the full list of available extracurricular programs. Each program page displays the activity schedule, supervising teacher, a brief description of the program, and the available participant quota. Students submit their registration through a digital form and can track their registration status – whether accepted, pending verification, or declined – without needing to follow up in person. On the administrator side, the system supports centralized management of all extracurricular records. Administrators can add new programs, update existing entries, or remove inactive ones. They can set schedules and quota limits for each activity, verify incoming registrations, and process acceptance or rejection decisions through the same interface. The system also generates downloadable reports – participant lists, schedule summaries, and registration recaps – that replace the manual compilation previously done by hand. The overall workflow of the system is illustrated in Figure 3.

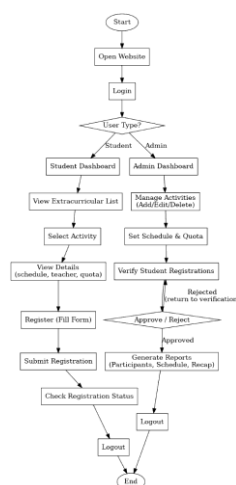


Figure 3. Flowchart.



4.2 Discussion

The shift from paper-based to web-based registration produces several concrete improvements. Registration data is stored automatically upon submission, eliminating the manual summarization step that previously delayed processing. Structured input forms with required fields reduce the likelihood of incomplete or duplicate entries – the kinds of errors that were common in the paper system and difficult to catch after the fact. Students can register at any time without coordinating with a coordinator or visiting an office, which lowers the barrier to participation. Program information is available on demand rather than dependent on whether a student happened to be present during an announcement. For administrators, real-time access to participant data and registration status replaces the need to sort through physical forms, and report generation becomes a matter of a few clicks rather than hours of manual compilation.

The decision to use Agile development for this system was not arbitrary. School environments present a specific challenge for software development: users often cannot articulate what they need until they see something that does not work for them. A student might not realize the registration confirmation page is unclear until they try to use it. An administrator might not know they need a bulk data export until they are copying entries one by one into a spreadsheet. Agile accommodates this by building the system in short sprints, testing each module with actual users – students and administrators – and revising based on their feedback before moving to the next stage. Problems surface early, when they are still cheap to fix, rather than at the end of a long development cycle when changes require significant rework. Each sprint in this project focused on a specific set of features: user authentication and program browsing in early sprints, registration submission and status tracking in the middle stages, and administrator verification and reporting tools in the later ones. Feedback gathered after each sprint directly shaped what was adjusted before the next began. The result is a system whose interface and features reflect how users at SMK Negeri 72 Jakarta actually work, not how they were assumed to work at the start of the project. Paired with TAM as the evaluative lens, Agile serves as the method by which the system earns its perceived usefulness and ease of use – not by assumption, but through repeated contact with the people who will use it.

5. Conclusion

The web-based extracurricular registration system proposed in this study directly addresses the operational failures of the manual process at SMK Negeri 72 Jakarta – slow data handling, frequent recording errors, uneven information distribution, and the absence of any real-time monitoring capability. By moving registration online, the system gives students a clear, accessible way to browse programs, submit their choices, and track their status without depending on physical forms or face-to-face coordination. Administrators, in turn, gain a centralized platform for managing program data, processing registrations, and generating reports that previously required manual compilation.

The broader implication is straightforward. When registration is easier, more students participate. When data is recorded digitally from the point of entry, errors decrease and administrative workload drops. These are not ambitious claims – they follow directly from replacing a paper-based process with a structured digital



one. What makes this system worth building, beyond the technical convenience, is that extracurricular participation at a vocational school is not a minor concern. It is where students develop the organizational habits, communication skills, and sense of responsibility that classroom instruction rarely has time to build. A registration barrier that discourages participation is therefore an educational problem, not just an administrative one. This system removes that barrier. That is its purpose, and on that basis, its development is justified.

References

- Aspari, R. S., Habibie, A., & Muhammad, T. (2023). Rancang Bangun Sistem Informasi Manajemen Ekstrakurikuler Berbasis Web. *PRODUKTIF: Jurnal Ilmiah Pendidikan Teknologi Informasi*, 7(2), 653-663.
- Annisa Zahra Firdausya Nugraha, A. P., Dian, A., & Annisa, C. P. (2024). Implementasi wawasan nusantara dalam menghadapi tantangan di era globalisasi, 1–5.
- Annisa, F., Setyawati, E., & Suparno, A. (2023). Sistem Informasi Ekstrakurikuler Berbasis Web Pada SMK Muhammadiyah Somagede. *INCODING: Journal of Informatics and Computer Science Engineering*, 3(1), 1-10. <https://doi.org/10.34007/incoding.v3i1.315>.
- Hadi, N. F., & Afandi, N. K. (2021). Kajian Pustaka Dalam Penelitian Pendidikan. *Sultra Educational Journal*, 1(3), 64-71.
- Irawan, B. (2019). Organisasi formal dan informal: tinjauan konsep, perbandingan, dan studi kasus. *Jurnal Administrative Reform*, 6(4), 195-220. <http://dx.doi.org/10.52239/jar.v6i4.1921>.
- Kementerian Pendidikan Dasar dan Menengah. (2014). *Peraturan Menteri Pendidikan dan Kebudayaan Nomor 62 Tahun 2014 tentang kegiatan ekstrakurikuler pada pendidikan* (pp. 1–6).
- Maulana, S., & Faza, R. (2022). Aplikasi Pendaftaran Ekstrakurikuler Berbasis Web Di Smk Pasundan Majalaya. *Jurnal Education and development*, 10(1), 84-87. <https://doi.org/10.37081/ed.v10i1.3271>.
- Trimarsiah, Y., & Arafat, M. (2017). Analisis dan perancangan website sebagai sarana informasi pada lembaga bahasa kewirausahaan dan komputer akmi baturaja. *Jurnal Ilmiah MATRIK*, 1-10.
- Yusril, A. N., Azizah, I. L., Putri, A., & Zahra. (2021). Systematic literature review analisis metode agile dalam pengembangan aplikasi mobile. *SISTEMASI: Jurnal Sistem Informasi*, 369–380.