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Design Of An Application For Managing Educational Donation Funds At A School In Bandung

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Abstract

The collection of payment data and the recording of expenses are essential activities in financial management for both individuals and organisations. In the ever-evolving realm of information technology, creating a web application serves as an effective means to streamline and improve the efficiency of these procedures. The web application can leverage technology to offer capabilities that enhance the collection of payment data. Users can digitally document payments, set payment reminders, and efficiently track their payment history. The creation of a technology-driven online application for gathering payment data and tracking spending provides convenience for users while also benefiting organisations or enterprises. Organisations can analyse expenditure patterns, optimise resource allocation, and enhance decision-making in financial planning with well-documented data.

Keywords: *Application, Data Collection, Recording, Website*

Introduction

Technology signifies the progression of hardware and software, informed by scientific understanding, that adapts over time and is motivated by user requirements. (Adinda & Niwanputri, 2021; Gustiana Sugosha et al., 2021) With technological advancement, tasks previously performed manually are now increasingly supported by innovations. Currently, technology is vital, as it can swiftly aid individuals, institutions, and organizations, particularly within educational settings. (Callaghan & Reich, 2021; Imanuel et al., 2022; Salas-Rueda & Alvarado-Zamorano, 2022) This technology can be utilised in education to assist workers and educators in schools.

Education in Indonesia extends beyond conventional schools; for instance, a school in Bandung seeks to utilise information technology to streamline and accelerate staff operations, especially in the administration of educational contribution funding. The school's fund management is presently conducted manually, resulting in frequent inaccuracies in gift data recording. Furthermore, there is a lack of definitive payment documentation for each student who has made a payment. This final project develops an application for managing educational contribution funds, streamlining the documentation of payments and expenditures associated with these gifts.

Design

Setiawansyah et al., (2021) and (Hidayatulloh et al., 2022) elucidates that "Design is the phase in system construction that succeeds the system analysis stage and precedes the system development cycle." This phase delineates functional requirements and characterises the system to be constructed.

Authorities in educational technology underscore the significance of digital solutions in enhancing administrative efficiency. Zaitsev & Mankinen, (2022) an expert in educational systems, states, "The incorporation of technology in financial management diminishes human error while promoting accountability and trust among stakeholders." This viewpoint emphasises the significance of the Fund Management

Application in improving financial operations within educational institutions.

Furthermore, financial management specialists recommend the ongoing development of these apps to meet changing requirements. Frisancho et al., (2023), a financial analyst, asserts, "As educational institutions expand and transform, their financial systems must likewise adapt to address emerging challenges and opportunities." This insight indicates that continuous improvements to the programme, including the integration of student registration functionalities, might greatly benefit the school and its community.

Application

Zaitsev & Mankinen, (2022) and Chen & Metawa (2020) states, "An application, in general, is a practical tool that operates specifically and integratively based on its capabilities."

The author aims to develop a straightforward application for managing financial resources to support educational enhancement at a school in Bandung. This programme will facilitate the tracking of donations, ensuring that financial records are transparent and systematically organised. This application enables school personnel to effectively oversee contributions, update contributors, and ultimately improve the educational experience for children. The objective is to ensure the efficient utilization of funds to enhance the quality of education in the region.

Research Method

The technique for designing the web application begins with a needs assessment, which involves conducting surveys and interviews with prospective users—both individuals and organizations—to identify their specific challenges in managing payment data and expenses. Informed by this feedback, both functional and non-functional needs are compiled, emphasising critical aspects such as digital payment documentation, payment reminders, and tracking of payment history.

Subsequently, suitable technologies and frameworks are chosen for the application, taking into account elements such as programming languages and database management systems. The design process encompasses the development of wireframes and prototypes to conceptualise an intuitive user interface. The development process then utilises agile methodologies to construct the application, concentrating on essential modules for data entry, tracking, reminders, and reporting functions.

Comprehensive testing is performed, encompassing unit, integration, and user acceptance tests, to verify the application's functionality as designed. Upon completion of testing, the application is launched on a suitable hosting platform, ensuring accessibility for users while maintaining secure data management capabilities. Training classes and user guides are provided to assist users, supplemented by ongoing support to address any concerns.

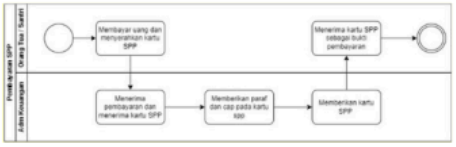
Post-launch, user feedback is gathered to identify areas for improvement, guiding iterative upgrades that further enhance the application. Analytics tools are used to help organisations examine expenditure patterns and optimise resource allocation based on the gathered data, thereby enhancing financial management efficiency.

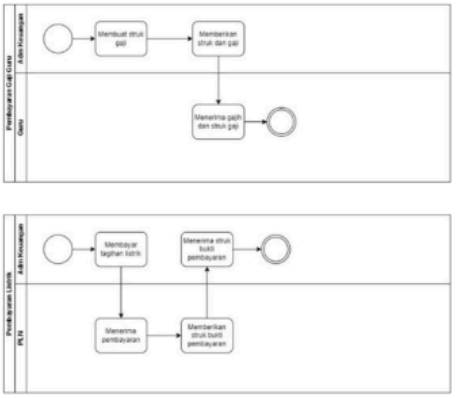
Result and Discussion

System Analysis and Design

a) Business Process Analysis

The subsequent section delineates the business process flow at a school in Bandung, commencing with the payment of educational development contributions by the parents of pupils.





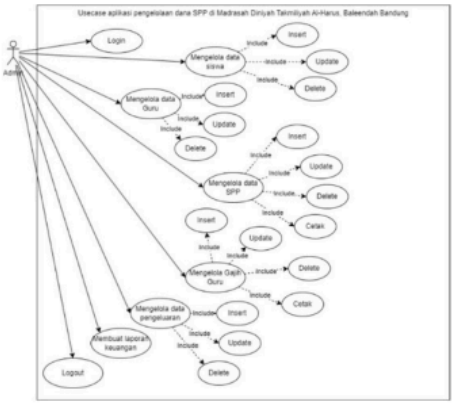
b) SWOT Analysis

This SWOT analysis seeks to delineate the Strengths and Weaknesses of the existing system, with the Opportunities and Threats linked to the implementation of the new system.

Strength	Weakness	Opportnity	Threats
The utilisation of engaging and enjoyable pedagogical approaches enhances student enthusiasm.	The deficiency of human resources affects school management and many activities within the institution.	The local community's faith in the school must be upheld, and the students' constant achievements can enhance the school's quality.	Some schools have more effectively integrated technology.

c) **New System Proposal**

i. **Use case diagram**

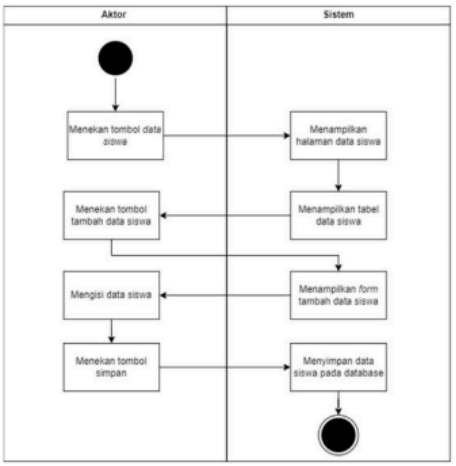


ii. **Table Scenario**

Identification	
Name	**Managing student data**
Description	The process of adding, reducing and changing student data in the application
Actor	Admin
Main Scenario	
Actor Action	System Reaction
1. Press the student data button	2. Display the student data page
	3. Displaying student data table
Alternative Scenario	
1. Press the student data button	2. Display the student data page
3. Press the add student data button	4. Displaying student data table
	5. Displays the additional student data form

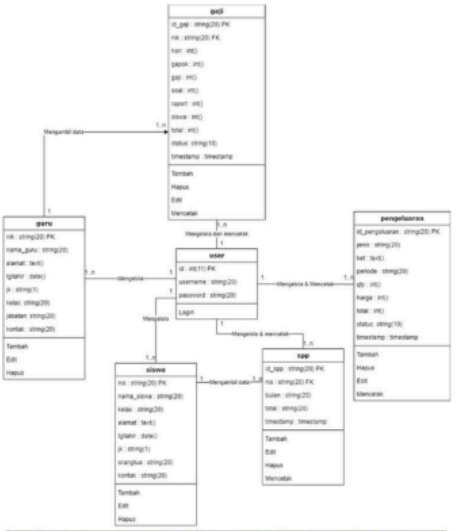
6. Fill in student data	
7. Press the save button	8. Save student data in the database
1. Press the student data button	2. Display the student data page

iii. Activity diagram



d) System Design

i. Database Design



No	Nama Field	Tipe Data	Ukuran	Keterangan
1	nis	String	20	Primary Key
2	nama_siswa	String	20	
3	kelas	String	20	
4	alamat	Text		
5	tgllahir	Date		
6	jeniskelamin	String	1	
7	orangtua	String	20	
8	kontak	String	20	

ii. Interface Design



iii. System Implementation

The system implementation phase involves detailing an application system to ensure its readiness for operation.



Figure 1. Page View



Figure 2. Home Page View

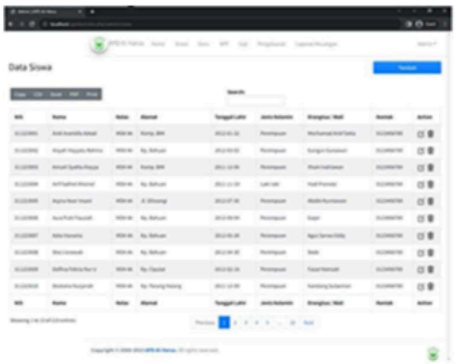


Figure 3. Deposit Page View

Conclusion

This research concludes that the Fund Management Application used at a school in Bandung is effective. This application has effectively eradicated manual financial management and payment tracking, substantially reducing inaccuracies in the documentation of student contribution data. By optimizing these processes, the institution can ensure more precise and effective financial management.

Additionally, the programme offers more transparent payment receipts for every student who has made contributions. These receipts contain critical information such as Student ID, name, class, payment date, payment status, and the signature and stamp of the financial personnel, thereby improving transparency. Future researchers are encouraged to expand the application's scope to meet the school's requirements more effectively and to incorporate functionalities for student registration of new candidates.

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