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Application of Zachman Framework in School Financial Management Information System Design

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ABSTRACT

Private schools are inseparable from the origin of funding from students as well as from school operational assistance, the funding received by the school certainly has different uses according to the allocation of funds paid by the student and the origin of school operational donations, so in the process of recording and managing these funds, accuracy is needed so that there are no errors in the process of making financial statements at the end of each period. So that schools need a system in managing this. In response to this, researchers tried to describe a financial management information system design that can be used in accordance with school needs using an enterprise architecture framework, namely the Zachman Framework which is able to assist in the process of making this school financial system, the design of this system or system blueprint puts forward the original view as a perspective that exists in schools and is used as a reference in making this system so that the system can be designed in accordance with the needs and problems faced by schools, especially in financial management, in taking the necessary data researchers make observations and interviews directly to the research location, namely SDIT Andalusia and in financial management there are still some errors such as data redundancies, writing and recording errors due to still using manual recording, so that in the preparation of financial statements there are often errors if not careful in perform the arrangement. In this study, the author only contains four perspectives contained in the Zachman framework, including: Planner perspective, Owner perspective, Designer perspective and Builder perspective.

KEYWORDS
Information System
Zachman Framework
School Finance
Enterprise Architecture
System Plan

1. Introduction

An organization actually has a system that is used in carrying out the operational activities of the organization. Organization is a whole collection of human and non-human elements, each of which has a function in achieving goals, The system is a collection of elements and mechanisms that interact in a network that has the aim of completing an exclusive target. To achieve certain targets, an organization needs various sources of information to support the activities of activities carried out on elements that exist in a system. Information is data that has been processed into a more useful

form and provides more benefits for those who receive it, Information systems are systems that present information that aims to make decisions and carry out operational activities of an organization and provide a competitive advantage,[3] systems are formed from the combination of people, information technology and organized procedures.

System software means one part of the information system that is used to support activities in an organization for one of the senses to facilitate the process of business activities of an organization. Information systems combined with a personal computer technology will form an information technology that is useful and efficient in managing information that is the source of activities in a business process in the organization. In the current era using issue technology and issue systems in a forum is a form of response from the increasingly rapid development of the times to support the smooth running of an organization's operational activities, in an organization news technology and issue systems as one of the important things in carrying out an organization's business process or forum earlier to be more efficient in its implementation, School financial management is a way of regulating and accountable for the use of all types of financial uses received from students.

Financial management in schools is an important thing because finance is one of the sources of funds to carry out the operational activities of the institution, good management or arrangements are needed in running it so that the activities carried out run according to the goals to be achieved. In designing a system to be more organized when using a framework, Zachman framework is one of the enterprise architecture frameworks that is useful for making it easier to map an information system software so that it is in sync with the perspective of each element contained in the forumSealin the Zachman Framework is an example theory of Enterprise Architecture, as a tool that serves to categorize deliverables to describe Enterprise Architecture is fully and widely adopted by companies across the globe. Zachman Framework also provides a structured way of thinking about enterprises in terms of information systems, so that information systems can be explained in more detail and requirements influenced by the origin of many different points of view, and can create synchronous information systems using what is needed by the organization or institution.

In this study, a form of system application design that focuses on the finance section of the forum is proposed with the aim of delivering illustrations in forming a system software that is suitable for use to overcome matters related to school financial management, using the Zachman Framework as a framework for making enterprise architecture is expected to provide an overview of the system software desired by the related party. The results needed from this research mean the creation of a blueprint for financial information system software that is in accordance with what is needed by institutions, especially in the financial sector, which is the focus of discussion in making systems using the Zachman framework.

2. Method

In this study, the approach used is serious in the application of the Zachman Framework to analyze the financial management information system. The research was conducted using several methods to receive data from human resources related to this research. Research starts from the preliminary stage, which is to compile in advance the background and problem formulation. The next stage analyzes the consequences and application design by analyzing according to the data that has been collected. Finally, implementation planning, after the design has been completed, it will proceed to implementation planning.

Figure 1. Stages of Research 1

Zachman Framework

Zachman Framework means an Enterprise Architecture framework that provides a way to view and define an enterprise in a formal and well-structured manner. This framework means matrix 6×6 which consists of perspective rows and is described using the 5W and 1H question columns, namely: 1) What (data): describes the unity that is called important in the effort. Unity means things for which information needs to be preserved. 2) How: defines functions and activities. Inputs and outputs are also considered in this column. Where: shares the geographic location and correlation between activities within the organization, including the primary geographic location of the business. 4) Who: represents people in the organization and metrics to measure their capabilities and performance. 5) When: represents when and shares work criteria.

3. Results and Discussion

- Making a system design needed by the forum, it is expected that a data analysis and mapping of problems that occur in the division, using how to map the problems that occur then arrange these problems into the framework of the Zachman matrix, synchronous with synchronous rows and columns using the perspective discussed. After all the rows and columns in the matrix are filled in, then each of the results of the origin of the matrix will be described one by one into a mapping conclusion according to the perspective in the Zachman framework. Below is the result of the mapping carried out using the Zachman Framework which is outlined in the form of tables 6×4, because this study only discusses 4 perspectives from 6 perspectives contained in the Zachman Framework.

- Table 1. Zachman Framework Mapping 1

	Data (What)	Fungsi (How)	Jaringan (Where)	Orang (Who)	Waktu (When)	Motivasi (Why)
Tujuan/Cakupan (Perspektif Perencana)	Data Siswa, Data Pos Pembayaran, Sumber daya Manusia	Proses Penerimaan dana dan Pelaporan dana	Yayasan, Lembaga (SDIT Andalusia)	Kepala Sekolah, Bendahara, TU	Waktu Penerimaan dana dan pelaporan dana	Visi dan Misi Lembaga
Model Bisnis (Perspektif Pemilik)	Daftar Entitas	Proses bisnis yang berhubungan dengan penerimaan dana dan pelaporan dana	Jaeringan yang ada di SDIT andalusia	Daftar Sumberdaya manusaia internal atau yang terkait	Time schedule pembangunan proyek sistem informasi	Alasan Pengadaan Sistem Informasi
Model Sistem Informasi (Perspektif designer)	*Class Diagram*	*Activity diagram*	Desain Jaringan yang diusulkan	SDM yang bertugas dalam pembangunan system	Detail jadwal perancangan *model system*	Aturan-aturan pembuatan model
Model Teknologi (Perspektif Builder)	Relasi antar table	*Squance Diagram*	Desain jaringan pengelolaan data keuangan	Gambaran interface aplikasi	Detail jadwal perancangan aplikasi	Aturan-aturan pembuatan Desain

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- Planning Perspectives

- Contextual architecture is another name for the planner's perspective that reveals the process of receiving funds and financial reporting at SDIT Andalusia Sukabumi City. a. What: what is described in this column is data sourced from the planner's point of view. The results of the analysis of the data include: 1. Student data, namely student data that has become students of SDIT Andalusia Sukabumi City two. Payment post data is a fund receipt post grouped based on three payment types. Payment data is payment data that has been received by the school treasurer b. How (Process): what is explained in this column is the discourse on the process of recording funds from various synchronous income sources using payment items in SDIT Andalusia and all types of expenditures made on activities at SDIT Andalusia c.Where (Location): which is discussed in this column the location of SDIT Andalusia Sukabumi City is explained, which is on Jl. Merbabu RT 03 RW 10 in Karangtengah Village, Gunung Puyuh District, Sukabumi City, West Java Province. d.Who (People): discussed in this column are about actors who play an important role in the process of receiving and spending finances including: 1. The owner of the Foundation plays a role as the recipient of the final report 2. The principal plays the role of getting the initial report 3. Administration Staff plays a role in processing financial data received by the school 4. The treasurer plays a role in reimbursing school operating expenses 5. students make payments porto Education services.

- Owner's Perspective

- In the perspective of the owner or owner will describe a proposed news system and what kind of system it will run later using the news system and available technology, as a result convey an overview of the system that is in accordance with the conditions of the business processes that exist in the institution. What (Data): what is described in this column is data sourced from the owner's point of view. As a result of the analysis, the data came in the form of entities including: 1. Data_siswa, namely student data who have become students of SDIT Andalusia Sukabumi City 2. Pembayaran_siswa is the payment of student obligations that will be made by students similar to

tuition payments, social development funds and others. 3. Data_pos_pembayaran is a post of receiving funds grouped according to the type of payment 4. Data_pembayaran is payment data that has been received by the school treasurer that has been inputted by the payment receipt staff.

- Figure 2. Purpose Forum 1

- Why (Motivation): what is explained in this column is the goal that the forum wants to achieve about the ultimate goal of the original design of the design of the system designed, among others, namely:

- The realization of well-managed administrative records so that the business processes carried out become more effective and efficient.

- Solve problems that occur in the implementation of receiving funds such as recording errors and double input or data redundancies

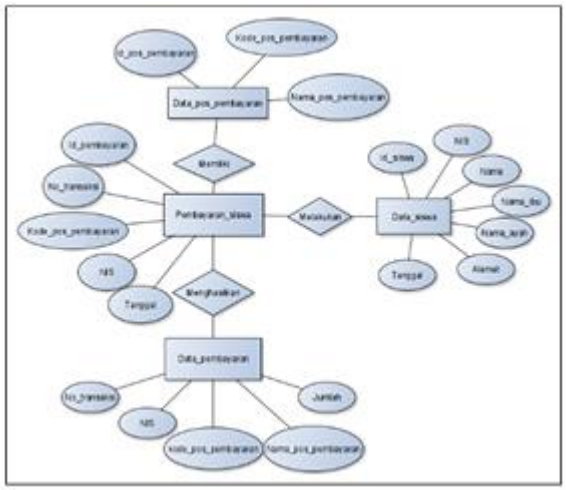
- Create and implement gossip technology to align using the vision and mission of the forum.

- Can provide the right financial statement results so as to improve the quality of performance and have a positive impact on the evaluation of the foundation.

- Perspective Designer

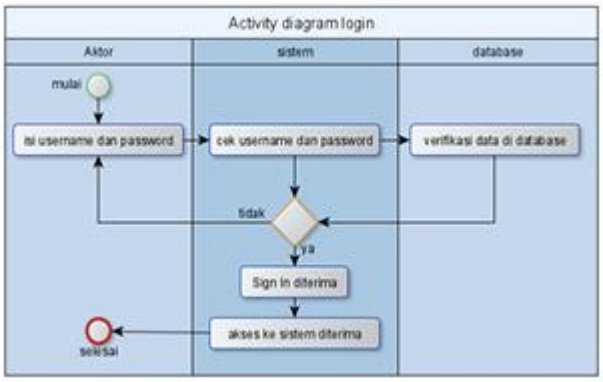
- In the perspective of the designer or example of the news system that will be the basis for the design of the system to be used in the form of examples of logic along with other needs must provide data elements, process flows and functions that describe the entity

- What (Data): in this column conveys an illustration of the relationship between entities more clearly which is outlined in the form of an Entity Relation Diagram (ERD).

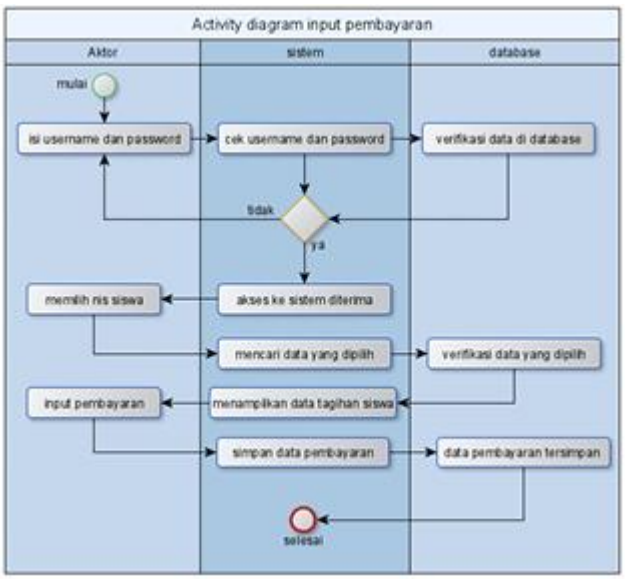


- Figure 3. Element Data 1

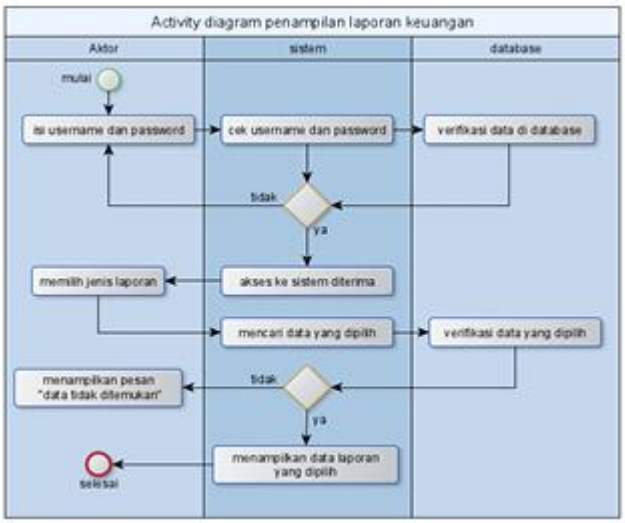
- How (Process: Contains a software architecture that describes the proposed information system. in this column reveals system behavior activities in the form of activity diagrams, including: Login activity diagram, payment input activity diagram, and financial statement appearance activity diagram.



- gambar 4. Activity diagram login 1



- Figure 5. Payment Diagram 1



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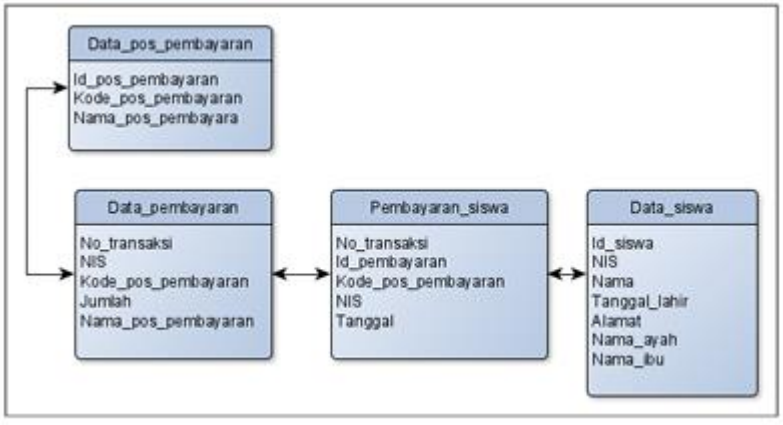
- Figure 6. Report Diagram 1

- Perspective Builder

- This section reveals the initial design of a proposed information system in the form of an array of physical data examples that must be adapted using information system examples such as input / result devices or other technological needs.

- What (Data): this column contains relationships between tables containing examples of physical data represented as tables along with attributes that will be used to create the system to be created. Below is a simple illustration of the relationships between tables needed in this system.



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- Figure 7. Input Devices 1

- How (Process): in this column is explained the modeling of the process that occurs in the information system into a sequence diagram containing the inputs to be processed and the results produced by the system.

a. Where: provides a physical picture of where Andalusian SDIT technology needs come from. These needs are in the form of hardware, software and system software (operating system). in this

column is explained the map of data management networks that will be applied in system applications that will apply in Andalusian SDIT.

b. Who: This column displays the system application interface that refers to the system perpetrator or user.

c. When (when): The application development design schedule is contained in this column which aims to select when and the target of making information system software begins from the process of creating databases, creating design interfaces and coding software event codes.

d. Why (Motivation): in this column explains what tools are used when producing software until it is completed as well as: Software used is open source because to reduce costs that are too large, the software used includes: database software using MySQL and processed through Phpmyadmin, Programming languages using PHP and HTML, Software layout design using CSS methods and web server software using Apache.

4. Conclusion

a. In accordance with the series of studies on the Zachman Framework above, it illustrates that in the process of implementing the Zachman Framework is required to make direct observations of the object under study and among the research that will occur the author concludes several points that can be taken, including:

b. The original purpose of applying the Zachman Framework in an information system design is a method that can be said to be perfect because to create an architecture that suits the needs of an institution or organization, various views are expected in accordance with what is expected by each part of the institution or organization, as for what is overcome by the use of this Zachman Framework including data architecture, functions, networks, human resources, time and motivation as a result are able to help solve more problems faced;

c. Software systems that are carefully planned are one way to increase effectiveness in carrying out a business process contained in the forum such as in the process of recording and writing financial statements which means a business activity that is very crucial because it involves funding all activities carried out by the forum and an organization that has a good information system in addition to being able to increase positive assessments from stakeholders, institutions can also enhance performance in this institution or organization.

d. The blue print or application design obtained in this study is needed to be able to be a reference in making financial application systems and be able to overcome problems that occur in financial management in institutions so that they can be in accordance with what is expected by the financial division in carrying out forum financial reception and management activities, reducing errors that often arise similar to data redundancies in recording and preparing reports finance and increase the effectiveness of performance in the finance division so that it is more organized using the reports produced, and forms financial information reports that are efficient and easy to understand by foundation owners.

Reference

[1] Karthikeyan VG, Thangaraj P, Karthik S. 2020. Towards developing hybrid educational data mining model (HEDM) for efficient and accurate student performance evaluation. Soft Computing 24(24):18477-1848

[2] Rifa'i and Fadhli, Organization Management, vol. 53, no. 9. 2013.

[3] F. Andalia and E. B. Setiawan, "Development of Information Systems for Processing Job Seeker Data at the Social and Manpower Office of Padang City," Computer: Journal of Computer Science and Informatics, vol. 4, no. 2, pp. 93–97, 2015, doi: 10.34010/komputa.v4i2.2431

[4] Kragel PA, LaBar KS. 2015. Multivariate neural biomarkers of emotional states are categorically distinct. Social Cognitive and Affective Neuroscience 10(11):1437-1448

[5] Li D, Ortegas KD, White M. 2023. Exploring the computational effects of advanced deep neural networks on logical and activity learning for enhanced thinking skills. Systems 11(7):319

[6] Li T, Xia T, Wang H, Tu Z, Tarkoma S, Han Z, Hui P. 2022. Smartphone app usage analysis: datasets, methods, and applications. IEEE Communications Surveys & Tutorials 24(2):937-966

[7] Ling Y, Cai F, Hu X, Liu J, Chen W, Chen H. 2021. Context-controlled topic-aware neural response generation for open-domain dialog systems. Information Processing & Management 58(1):102392

[8] Liu Z, Wen C, Su Z, Liu S, Sun J, Kong W, Yang Z. 2023. Emotion-semantic-aware dual contrastive learning for epistemic emotion identification of learner-generated reviews in MOOCs. IEEE Transactions on Neural Networks and Learning Systems 37486839:1-14

[9] Nie W, Bao Y, Zhao Y, Liu A. 2023. Long dialogue emotion detection based on commonsense knowledge graph guidance. IEEE Transactions on Multimedia 3267295:1-15