Architecture information system for zakat, infaq and sadaqah management institutions

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Abstract. Indonesia had potential zakat as much as 217 Trillion Rupiah in 2017, but can only be collected 6 trillion or 0.2%, one of the factors is Muzakki's (Zakat Giver) lack of trust in zakat management institutions so that they prefer to distribute their zakat without going through zakat management institutions directly. To encourage improving management of zakat management institutions requires planning, designing, and building systems that can assist in managing zakat. This study aims to design an architectural enterprise for zakat management institutions in achieving the collection, management, utilization, and distribution of zakat and alms. The methodology used in this study uses the TOGAF ADM approach by collecting data through observation and interviews with one of the private zakat management institutions. The results of this study are in the form of a system architecture design that can be used as a reference for zakat management institutions with a prototype of the zakat reporting system.

1. Introduction

Zakat is very important in Islam, where zakat is the third pillar of Islam which can be a balance in the economic sector of society [1–3] in this case helping alleviate poverty and improve the welfare of the people. Indonesia is the country with the largest Muslim population in the world, where the number of Muslim people in Indonesia is 207.176.162 people or 87.18% of the total population in Indonesia [4], based on this amount of zakat income potential in Indonesia in 2017 it reaches 217 Trillion Rupiah [5] but only 6 Trillion can be collected per year or as much as 0.2%.

Management of zakat in Indonesia is regulated in Law No. 23/2011 in which a body created by the government manages the management of zakat, namely the Amil Zakat Agency (BAZ) as the coordinator of zakat management, also the Community Institution (LAZ) [6], Problems that result in not recorded all zakat activities by zakat management institutions, one of which is muzakki (Zakat Giver) which directly gives zakat to mustahiq (Zakat Recipients). The solution that can be offered to overcome this problem is to build an Information System and Information Technology (IS & IT), but the development of unplanned IS & IT can be a new problem [7–9].

The Pusat Zakat Umat (PZU) is a zakat institution that is consistent in managing Zakat, Infaq, and Shadaqah (ZIS). PZU in 2016 has managed zakat, infaq, and shadaqah funds for not less than 1 billion rupiahs per month, PZU has a vision of being a Superior and Competitive Institution in Empowering People, to support that vision, it requires support from good IS and IT so that the organization can achieve its goals [10], enterprise architecture design is a solution for IS and IT planning that is harmonious between organizational needs and the role of IS and IT.
TOGAF is a specific framework and has supporting tools that are quite complete in its implementation [11]. TOGAF issued by The Open Groups Architecture Framework released in 1995, with the latest version currently available is version 9.1 [12,13]. The core of TOGAF is the Architectural Development Method (ADM): a process-based model that explains the steps needed to develop and use company architecture [14,15]. Several studies have succeeded in designing enterprise architecture using TOGAF applied to organizations including banking [16], government [17], tourism [18], manufacturing industry [19], and also education [20], along with other organizations using TOGAF [6,8,16]. In this study aims to build an enterprise architecture with the results in the form of a system development blueprint at the Garut representative office with TOGAF with the stages of Preliminary, Architecture Vision, Business Architecture, Information System Architecture, and Technology Architecture and focuses on the main activities.

2. Methodology
This study uses two methodological approaches consisting of data collection methods conducted by interviewing, observing, and studying literature. And system design analysis methods using TOGAF ADM Framework version 9.1 [14,21] to produce integrated SI & IT governance [22]. The research framework adopting TOGAF ADM can be seen in figure 1.

- Data Retrieval: This stage is carried out to identify components related to research by conducting observations and study of documents used in the process of activities related to the system at PZU;
- Preliminary Phase: At this stage, it will produce a Value Chain from the organization that be used as parameters and limitations in system planning in this study;
- Architecture Vision: This phase aims to explain the scope of the architecture, coordinate with stakeholders in creating architecture vision, obtain management commitment to the ADM phase;
- Business Architecture: Defines business architecture development, initial conditions of business architecture, determines business models or business activities that support the desired Vision Architecture;
- Information System Architecture: At this stage, more emphasis on activities is how information system architecture be expanded that includes the data architecture and application architecture that will be used by the organization;
- Technology Architecture: describes the desired technology architecture, starting from determining the type of candidate technology needed, which includes software and hardware. And by considering alternatives needed in technology selection.
3. Result and discussion
In this section, the results of the research will be presented based on the framework that has been prepared previously.

3.1. Preliminary
This stage is the first stage approved by TOGAF ADM [6,14,15]; at this stage, the identification of needs is carried out. Based on the results of observations and interviews that have been carried out, architectural principles are obtained: Excellent, Competitive, Reliable, Transparent, Perfect Service, Professional, Innovative and Solutive, Integrated.

3.2. Architecture vision
The architectural vision presented in the Value Chain is divided into two activities, namely the main activities and supporting activities shown in figure 2; this vision is obtained based on the preliminary stages.

![Figure 2. Value chain PZU.](image)

3.3. Business architecture
In the stages of architecture, modeling carried out on business processes that are directly related to the central business processes that are mapped in table 1 by describing all functional areas.

| Functional Area          | Business Process                                                                 |
|--------------------------|----------------------------------------------------------------------------------|
| Management Fund Board    | Approving the monthly, annual budget plan, make decisions about managing the funds collected to fit with the provisions |
| Supervisory Board        | Approved the monthly, annual budget plan, and overseeing the management of funds |
| Managerial Board         | Compile a draft annual budget. Prepare a program plan for collecting, distributing, and utilizing funds ZIS. Carry out management, supervision, and evaluation of the implementation of fundraising, distribution, and utilization programs. Staff recruitment and coaching |
| Fundraising Distribution | Developing and implement a fundraising strategy                                   |
| Division                 | Identification of muzakki and prospective muzakki (institutions or individuals)    |
|                          | Building communication with muzakki and prospective muzakki (institutions or individuals) |
Table 1. Cont.

| Division                         | Activity                                                                 |
|---------------------------------|---------------------------------------------------------------------------|
| Distribution Division           | The spread of ZIS Fund                                                    |
| Utilization Division            | Manage programs to use ZIS funds                                          |
| Administrative Management Division | Create and examine activity documents and proposals                       |
| Financial Management Division    | ZIS fundraising data collection                                            |
| Facilities and Infrastructure Management Division | Make reports on the progress and use of ZIS funds                   |
| Public Relations and Publications Division | Acquisition, Maintenance and Management of infrastructure and facilities |
|                                  | Cooperating with others, Communicating with Muzakki and Mustahiq, and Publication to the media |

3.4. Information system architecture

In this phase, the design has been focused on PZU’s main activities, namely ZIS management both collection, management, and distribution, so that the user activities described in Figure 3 are in the form of a use case diagram. While in figure 4 is a system view that has been built for the ZIS management process.

![Management Information System of ZIS](image)

**Figure 3.** Use case diagram management information system of ZIS.
3.5. Technology architecture

At this stage, a technology architecture is defined that supports the planning of technology architecture. In Figure 5 is the network conceptual architecture needed, the network architecture that is designed must be able to support information systems that are reliable, flexible, and adaptable if changes occur [6,15]. Figure 6 is the architectural design layer divided into five tiers with details: 1) Interface Layer, in this section depicted devices that can be used as system access devices; 2) Application Layer, this section provides a page that emphasizes user convenience, application functions, and multi-platform or displays supplied in accordance with the tools that access it; 3) Support Layer, is part of the system configuration, modules used, algorithms, and services used; 4) Data Layer is a picture of how data is stored to support business functions; and 5) Base Layer is a layer containing about the operating system used, network infrastructure used, servers, and other IT infrastructure. This section is the main foundation that manages the entire process and resources used. Figures 5 and 6 are made based on organizational needs and long-term system development, where the information system architecture built requires a flexible, anywhere-accessible, multi-platform, reliable and fast design, so that the design adopts some concepts from IoT (Internet of Things) [15,23].
Figure 5. Network architecture design.

Figure 6. Architecture layer design.
4. Conclusion
As a framework for designing enterprise system architecture, TOGAF 9.1 can be used as a reference for developing system architecture for both government and private organizations with various fields with detailed and flexible results for the development of long-term (future) organizational information systems. The use of TOGAF 9.1 in the design of the PZU enterprise architecture in managing ZIS produces an SI & IT architecture blueprint, which is divided into ten functional business fields.

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