

INFORMATION SYSTEM STRATEGUC PLANNING BASED ON TOGAF FRAMEWORK ADM IN 2ND REVENUE FUNCTIONS DINAS PENDAPATAN DAN PENGELOLAAN (DPPK) BANDUNG REGENCY

Anisa Fatakh Sabila¹, Yuli Adam Prasetyo², Ridha Hanafi³

^{1, 2, 3}Bachelor Information System, School of Industrial Engineering, Telkom University

¹dafasa.317@gmail.com, ²y.adam.prasetyo@gmail.com, ³ridhanafi@gmail.com

Abstract

Dinas Pendapatan dan Pengelolaan Keuangan (DPPK) Bandung Regency is a regional organization as a support element local government headed by a Chief and is responsible to Regent through the Secretary of Bandung Regency. Nowadays, DPPK Bandung Regency have focus services in tax services. Tax services manageable by 1st Revenue Division and 2nd Revenue division. For 2nd Revenue Division manage PBB and BPHTB. In services process 2nd Revenue functions has E-Tax system for facilitate the PBB and BPHTB services. Before developing E-Tax, 2nd Revenue division should make information system strategic planning that guarantee implement to be optimal and can fulfil the business needs. Information system strategic planning (ISSP) has been recognized for its contribution to organizations and has become a very challenging subject for scientists and practitioners in the recent years. Framework that support for developing ISSP in this research is TOGAF ADM, focusing in Phase F which is opportunities and solutions.

Keywords: information system strategic planning, TOGAF ADM, 2nd Revenue division

1. Introduction

The role of information technology (IT) in running the business process of a company in the information age nowadays were urgently needed. Information technology is not just limited to computer technology (hardware and software) that will be used to process and store information, but also includes communications technology to send information (Martin, 1999). Currently the IT architecture is something that is needed in a business. This is because the IT architecture designed all business processes in a company that enables organizations to plan and manage IT investments. In addition, the IT architecture can produce an IT master plan formed as blueprint of built system, implemented and maintained used to explain and demonstrate how the IT organization and information management elements work together for efficiency in supporting the goals of the organization (Dwi Cahyono, 2012).

Bandung regency government has 31 working units (SKPD), one is on Department of Revenue and Financial Management (DPPK). DPPK is divided into five divisions: 1st Revenue Division, 2nd Revenue Division, Budgeting Division, Treasury Division, Accounting Division and do formal official duty. In the process, DPPK implementing IT to improve performance of each DPPK division, namely:

1. Information system used by internal DPPK is Sistem Informasi Manajemen Daerah (SIMDA), namely:
 - a. SIMDA Keuangan is integrated local area financial management, including Treasury, Accounting, and Budgeting function.
 - b. SIMDA Pendapatan as tools taxes optimization/ local area retribution and help local government reports revenue and receivables management as document supporting local government financial report that reliable. In DPPK, Revenue SIMDA used by 1st Revenue Function.
 - c. Sistem Informasi Manajemen Objek Pajak (SISMIOP) used to managing land and building tax (PBB) online or connected with the public service. In DPPK, SISMIOP used by the 2nd Revenue Function.

Information system that already haven by DPPK still not intergrated. Based on problem above, information system strategic planning are necessary with helpful method in integrating each information system and overcome problems happened. The methods commonly said enterprise architecture (EA), EA based on harmonize consideration with strategic company target, integrating business process, facilitating and managing any aspect change in organization. In order to well implementing enterprise system, need a basis that called framework. There is some framework can be used to design enterprise system namely: Zachman, FEAF, and TOGAF as presented

by Institute for Enterprise Architecture Development (IFEAD). From any existing network, TOGAF meet a demand determined in assessing enterprise architecture framework. Thus, TOGAF is chosen as it meet the criteria, systematic, and completed in designing IT system in Enterprise Architecture. TOGAF is framework that giving comprehensive approach to design, planning, implementing and managing EA (Wartika, 2011).

A. Problem Statement

Based on background of problem above, problem statement in this study is how designing strategic information system planning based on TOGAF ADM framework on 2nd revenue function DPPK Bandung Regency?

B. Research Objectives

Purposes of this research are:

1. Creating a strategic information system planning that fit the 2nd revenue function in DPPK using TOGAF ADM framework.
2. Activity and information system solution to assist management options PBB-P2 and BPHTB in DPPK.

C. Problem Scope

Based on problem statement, the problem scope of this research are:

1. This research only done at level of analysis and design, not include implementation level.
2. This research use TOGAF ADM framework until stage E that is Opportunities and Solutions.
3. This research result is blueprint from Business Architecture, Data Architecture, Application Architecture and Technology Architecture.

D. Research Beneficial

The research beneficial of this research are:

1. Assist the Dinas Pendapatan dan Pengelolaan Keuangan in Bandung regency government in building a strategic information systems planning in 2nd revenue function according with needs.
2. Provide a blueprint overview as a guide in developing the business and information systems on 2nd revenue function in the Dinas Pendapatan dan Pengelolaan Keuangan Bandung regency government and give additional value for the Dinas Pendapatan dan Pengelolaan Keuangan.

2. Literature Study/ Methodology

2.1 Literature Study

A. Information System Strategic Planning

Since the 1980s, Strategic Information Systems Planning (SISP) has been recognized for its contribution to organizations and has become a very challenging subject for scientists and practitioners in the recent years. SISP is necessary to help organizations succeed in today's highly competitive global marketplace. Numerous studies have been performed on the strategic information systems planning (SISP) to assist in making the implementation and effectiveness easier and more profitable (Fahad, 2011).

Strategic planning of IS/ IT is identification process of computer-based IS application portfolio that will support organizations business implementation plans and realize business goals. Strategic planning of IS/ IT study the effect of the IS/ IT to business performance and its contribution to the organization in selecting the strategic steps. In addition, the strategic planning of IS/ IT also describes a variety of tools, techniques, and frameworks for management to align the IS/ IT with business strategy, even seeking new opportunities through the application of innovative technologies (Ward & Peppard, 2002).

B. Enterprise Architecture

Enterprise Architecture (EA) is described as platform to address the organization increasing complexity by ensuring that the organization use and optimize their technical resources in a right way. Because that, EA is seen as an integrated and holistic vision of the Company fundamental organization, which is implemented in its elements (people, process, application, etc.), their relationship to one another and to the environment, and the principles of design and evolution. Enterprise Engineering (EE) defined as engineering skills and activities needed to establish and implement enterprise architecture.

C. Enterprise Architecture Framework – TOGAF

The Open Group Architecture Framework (TOGAF) is a framework to build information architecture. TOGAF methods and tools to help acceptance process, production, using and managing an enterprise architecture. TOGAF based on iterative model process supported by best practices and collective existing architecture that reusable. TOGAF can be freely used by any organization who want to build enterprise architecture for internal using of organization. The TOGAF phase consist of:

a. Preliminary Phase

This phase use to prepare the organization for success in architecture project.

b. Architecture Vision

Architecture vision used to arrange the scope, obstacles and expectation for TOGAF project; creating architecture vision, validating business context, creating work architecture manifesto.

- c. Business Architecture
Business architecture function is developing business architecture, developing baseline and architecture target and analysing gap.
- d. Information System Architecture
Information Systems Architectures function is developing information system architecture, developing baseline and architecture target and analysing gap.
- e. Technology Architecture
Technology Architecture function is developing architecture technology, developing baseline and architecture target and analysing gap.
- f. Opportunities and Solutions
This phase is first step in the implementation of what's planned in the previous phase. This step requires the identification of the project implementation.
- g. Migration Planning
Building more detailed implementation and planning for their migration. Migration at this phase emphasizes on the right way to transfer pre-existing business into a business that has been planned. At this phase, an analysis of costs, the benefits gained, and identifying risks.
- h. Implementation Governance
At this phase the supervision of the architecture that has been made in plan to be implemented. The purpose of monitoring to ensure whether the project has been implemented running in accordance with the architecture was made or not.
- i. Architecture Change Management
Provide continuous control there is also a change management process. In this phase to ensure whether the existing architecture already supports what is required by the organization or not.
- j. Requirement Management
Management process throughout ADM architecture requirements and also ensure that each phase of the project TOGAF was based on the validity of business needs.

From the 10 phases above, TOGAF ADM phase for designing enterprise architecture only until Phase F or reached the Opportunities and Solutions phase.

2.2 Methodology

A. Conceptual Model

The conceptual model describes the concept of logic description to help solving the problems that will be designed in this research. Below Figure I is a conceptual model that was designed. The conceptual model in Figure III.1. refers to the TOGAF ADM, forming an iterative cycle for the entire process, between phases and in each phase. It can be seen that the model has three main components, namely input, process, and output. The component is a general overview of research on Strategic information system planning based on TOGAF Framework on revenue function II DPPK Bandung Regency.

On the input there is a document on the existing business and IT on 2nd Revenue Function of DPPK, Minister of home affairs Regulation No. 13 of 2006, Application SOP on 2nd Revenue Function, strategic plan of DPPK and Local area regulation. The results of these inputs will be processed further in the stages of business architecture that will result in organizational units, business services, and operation location. Then architectural design of information systems is done, both physical and logical, which is divided into two parts, data and applications. Then proceed with designing a technology architecture by identifying the technological components both physical and logical, which produces some artifacts such as the environment and location diagram and communication engineering diagrams. After the process of business architecture, information systems architecture and technology architecture, it can proceed with the determination of the gap and preparing a roadmap in opportunities and solution phase. The process produces multiple outputs such as artifacts every phase, there are Business Architecture, Information Systems Architecture and Technology Architecture artifacts thus forming an DPPK's IT Master Plan for Bandung Regency government.

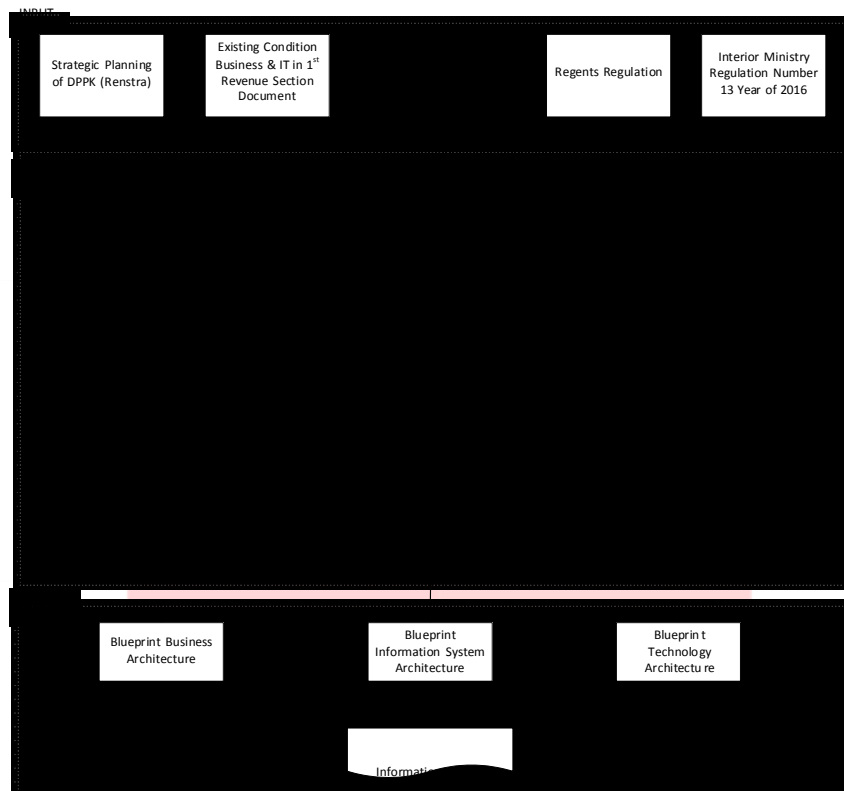


Figure I. Conceptual Model

B. Research Systematics

Below on Figure II is research systematics consisted of troubleshooting steps in the strategic planning of information systems based on TOGAF framework. Here is a systematic problem-solving in the strategic planning of information systems at the Dinas Pendapatan dan Pengelolaan Keuangan Bandung Regency refers to the TOGAF ADM:

A. Preliminary Phase

Preliminary Stage begins with the formulation of the problem and the determination of the boundary problem revenue function I based on the background of the research, as well as the determination of the purpose of the study based on field studies and literature.

B. Architecture Study and Identification Vision

Study Phase and Architecture Vision has two focus that is field studies and literature. The field study is collecting data phase through interviews and direct observation in the field 2nd Revenue in DPPK Bandung Regency. While the literature obtained by reading books and journals related. Furthermore, from field studies and literature generates mapping architecture vision which then be carried out verification and validation phases to the DPPK. If not verified and validated, then the mapping architecture vision will be repeated. If it has been verified and validated, then continue to the next phase.

C. Design Phase

Business, Information System, and Technology Architecture phase started after verification and validation in the step before, then can do with business identification, information systems, and technology to do an interview to the 2nd Revenue Division DPPK. If it has passed the identification phase, the next step is to identify the target architecture in accordance with the results of the earlier identification phase. After knowing the circumstances existing in DPPK and the target architecture to be built, then verification and validation to DPPK. If not verified and validated, then the making of the target architecture will be repeated. If it has been verified and validated, it will continue to the next phase.

D. Reporting Phase

In the reporting phase will produce a report formed as collection of artifacts. The artifacts is result of a design phase that has been done on the function of budget, treasury, and accounting in DPPK. Starting from the reporting phase of business architecture artifacts, IS architecture, after the technology architecture. The entire artifacts will form an IT Master Plan of DPPK's 2nd Revenue Function Bandung Regency.

E. Review Phase

In review phase will review the proposed design to DPPK. In this phase will presenting of design phase including Business Architecture, Information System Architecture, and Technology Architecture result. After presenting the design result, DPPK officer will give assessment to design result.

F. Conclusion and Suggestion Phase

At the conclusions and suggestions phase there is IT Master Plan testing. In this phase can be done using EA Score Card as a measure to check the quality of the EA that has been designed. EA Score Card made by the top level management by answering a few questions based on the assessment of business architecture area, IS architecture, and technology architecture. The assessment is devoted to focus on areas where alignment between areas.

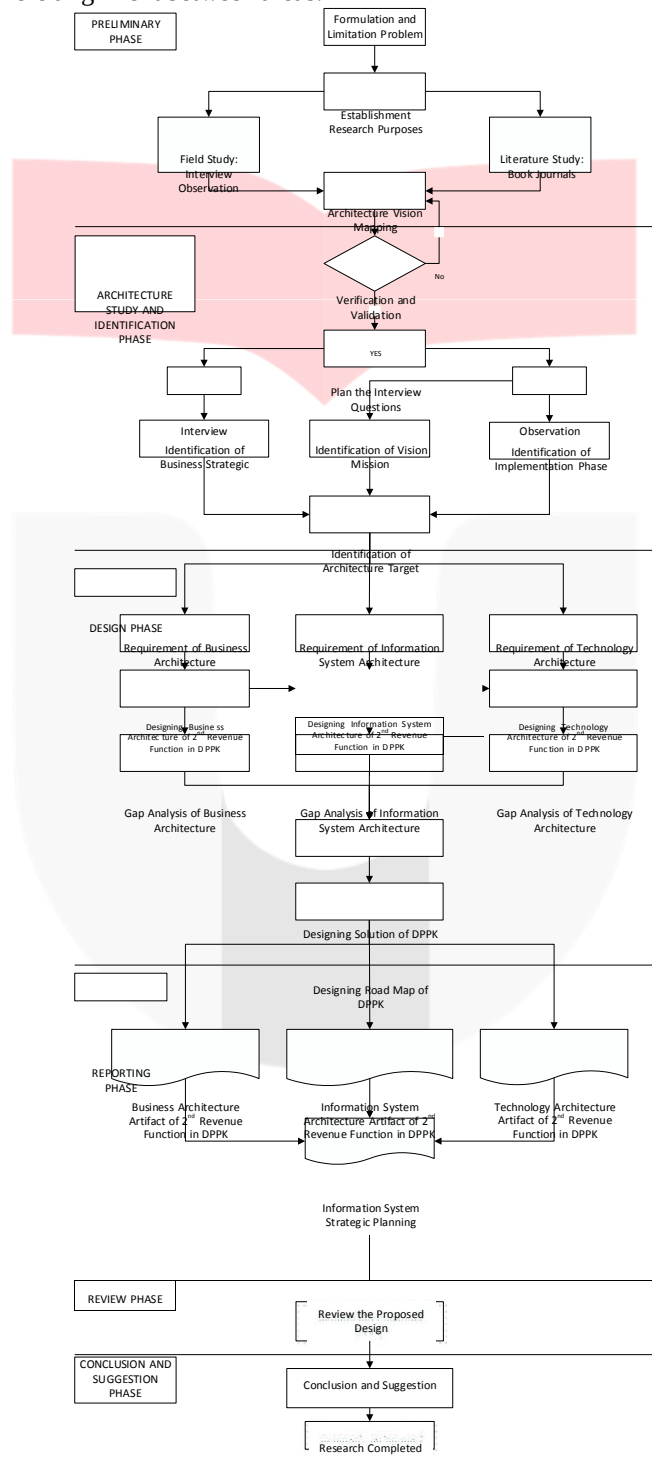


Figure II. Research Systematics

3. Analysis and Design

3.1 Preliminary Phase

Preliminary phase is the activity that contains about "where, what, why, who, and how the company or organization do architecture". Enterprise Architecture Framework provides a strategic view of an organization to allow for the design, planning, in coordinating, integrating, and conducts activities in building enterprise

architecture (TOGAF, 2011). Preliminary Phase are to determine and establish the architecture capability desired by the organization.

Table I. Principle Catalog

Enterprise Architecture Principles		
Architecture Principle	Name	Statement
Business Principles	Business and IT alignment	Bridging the gap between business and IT to improve the business value of IT investment.
	Service orientation	DPPK is a public oriented organization that should give the best services to people of Kabupaten Bandung.
	Business continuity	DPPK should be able to run from time to time, so it can give the satisfactions to people of Kabupaten Bandung.
	Compliance with standards and policies	Even though DPPK has a right of regional autonomy, it is still a government organization that should take a look of some valid regulations.
	Accountability	Local government as an executor of local finance should be responsible for any duties to the stakeholders, such as central government, DPRD, people.
	Fulfill finance obligation	Local finance should be managed well, so DPPK can fund and pay off all finance bonds, short or long term.
	Effectiveness and efficiency	Each program is planned and implemented to reach the objective with maximum result and minimum cost.
	Supervision	All elements that related to local finance should monitor all local finance processes by accessing the information about finance responsibility.
Data Principles	Data treated as an asset	Data is valuable things that should be managed properly to obtain the information.
	Shared data	Data is needed by other function or SKPD, so it should be shared for them to perform their job.
	Accessible data	Data is needed by other function or SKPD, so it can be accessed by them to perform their job.
	Data security	Data needs protection from the threat, such as unauthorized use and disclosure.
Application Principles	Appropriate with legislation	The application should be based on the policies about managing local finance.
	Easy-to-use	The application is easy to be used by the users, so they can finish the job lighter.
	System life cycle	Plan and manage application services throughout their entire life-cycle.
Technology Principles	Changes based on requirements	It may change due to the business needs.
	Minimize redundancy and reduce duplication	Helps reduce complexity and promotes greater efficiency.
	Interoperability	Maximize interoperability by using common standards and mechanism for the exposure and use of services.

3.2 Architecture Vision

Analysis and design solution concept diagram DPPK visualized for answer business needs where this solution concept diagram in high level. Solution concept diagrams show on Figure III below.

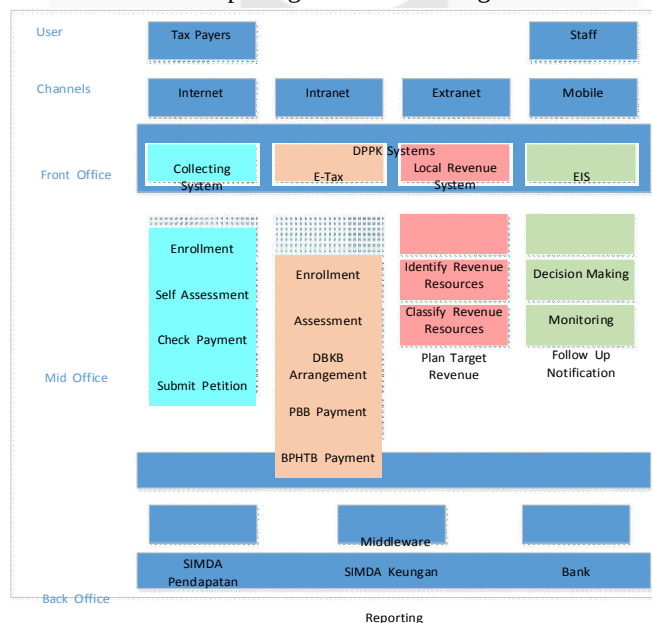


Figure III. Solution Concept Diagram

3.3 Business Architecture Phase

Before design business architecture, should do analyse business architecture requirements. The result of analysis can design business architecture requirements that show on Table II below.

Table II. Business Architecture Requirements

Requirement
Have a good tax administration
Have qualified tax employee
Realize expansion the tax object and subject
Have accurate and actual potential tax data
Realize of planning, monitoring and controlling of local tax revenue intensive
Have simple and clear of operational standard in easy and short time tax collection
Realize equitably tax collection

3.4 Information System Architecture Phase

To build an information system architecture the organization can find the gap between the requirement and the existing information system in that organization. After get the gap, the organization can know whereas to improve the information system existing. The Table III show the comparison between requirement system and the information system existing that running in 2nd Revenue division.

Table III. Information System Architecture Requirements

Requirement
System supports all business process
System can share data
System use internet service
System use intranet/extranet service
System can be accessed anytime and anywhere
System has updated information
System provide real time information
System has high level security
System can be used in high level management

3.5 Technology Architecture Phase

To build technology architecture should analyse technology architecture requirement that match with TOGAF ADM. The technology architecture requirement show on Table IV below.

Table IV. Technology Architecture Requirement

Requirements
Technology supports all running system
Capable to have centered storage media in a network
Have reliable security
There is distributed communication network
Technology bridges application with different platform
Technology usage based on requirement
Network connection is connected with all device
There is back-up for network
There is controlling and maintenance for technology usage

3.6 Opportunities and Solutions

To build opportunities and solutions should make some requirements for analysis the opportunities and solutions phase. The Table V below show opportunities and solutions.

Table V. Opportunities and Solutions

Requirement
System have a good local tax administration that can be access anytime and anywhere
System realize expansion the tax object and subject has updated information and can be used in high level management
System have an accurate and actual potential tax data that can share data supported by technology bridges with different platform
System realize of planning, monitoring and controlling of local rax revenue intensive support by capable to have centered storage media in a network
System have simple and clear of operational standard in easy and short time tax collection use internet service with back-up for network
System realize internal control regularly that can be used in high level management
System have a good service in treasurry and accounting administration that can share data
Ralize SIMDA supported by technology bridges application with different platform that capable to have centered storage media in a network

4. Conclusion and Suggestion

4.1 Conclusion

Based on result of analysis and design architecture in 2nd Revenue division of DPPK, so the conclusion can be taken are:

1. Analysis of the existing condition is required to determine the gap between the existing condition and the requirement. The gap used for design the architecture target.
2. Design architecture target covers architectural design targets within the scope of the business, data, application, and technology.
3. The initial stage of the design is determination the principles used to design the target, identification of scope and stakeholders who are concerned about the business, and the overview of system solutions offered to DPPK.
4. The design of business architecture target includes the identification actor or anyone who will be involved with the system, the business services provided by DPPK on 2nd Revenue system, the relationship between actor with their role and business functions in 2nd Revenue system, business interaction between business services provided by 2nd Revenue division and the other functions in DPPK, the identification requirement based on the goals, objectives and drivers and make business process improvement to meet specific business requirements.
5. The design of data and application architecture target is depending on the business architecture target. Design of data and application target must be suitable with the business.
6. The design of technology architecture target is depending on the data and application architecture target. Design of technology must be support the data and application architecture.
7. Designing roadmap in three years has function to complete strategic information system planning based on TOGAF ADM Framework.

4.2 Suggestion

Suggestions are given based on the results of the design and analysis has been done are:

1. For DPPK organization are expected to improve their public services especially for tax services, and for 2nd Revenue division there is an integration between other function in DPPK.
2. There is an appropriate policy within develop the information system in DPPK.
3. To further researcher are expected to do a research for implementing the strategic information system planning in DPPK based on TOGAF ADM Framework
4. For further researcher are also expected to do improving the system specially for E-Tax card has been to be automatic payment system that can reduce tax payers not pay PBB and BPHTB.

Bibliography

- [1] Weisman, Robert. (2011). An Overview of TOGAF® Version 9.1.
- [2] DPPK. 2011. Rencana Strategis DPPK. Bandung : 2011
- [3] Desfray, Philippe. (2008). Modeling Enterprise Architecture with TOGAF.
- [4] [16] Open Group, 2001. Other Architectures and Architectural Frameworks. Diambil kembali dari <http://www.opengroup.org/public/arch/p4/others/others.htm>.
- [5] Widyarningsih, Novia. (2014). Perencanaan Arsitektur Enterprise Menggunakan TOGAF Versi 9 (Studi Kasus: Dewan Kehormatan Penyelenggara Pemilu (DKPP)).
- [6] Enterprise Architecture and Engineering. (2015). Diambil dari: <http://www.ieeesmc.org/technical-activities/systems-science-and-engineering/enterprise-architecture-and-engineering>
- [7] Pulkkinen, Mirja. (2006). Systemic Management of Architectural Decisions in Enterprise Architecture Planning. Four Dimensions and Three Abstraction Levels.
- [8] Desfray, P., 2008. Modeling Enterprise Architecture with TOGAF. Springer.
- [10] Henk Jonkers, M. M. L. H. W. t. D. F. A. H. B. R. J. W., 2006. Enterprise architecture: Management tool and blueprint for the organisation. Springer, Volume 8, pp. 63-66.
- [11] Kemenag, 2004. Undang - Undang Republik Indonesia Nomor 25 Tahun 2004 Tentang Sistem Perencanaan Pembangunan Nasional. Jakarta: Kemenag.
- [12] BPAD, 2014. Modul 1 Pengenalan TOGAF pada MEGA. Bandung.
- [13] Tyas, Tities S, 2013. Perancangan Enterprise Architecture Planning (EAP) Pada Proses Manajemen Aset dengan Zachman Framework (Studi Kasus Divisi Manajemen Fasilitas PT. XYZ). Yogyakarta.
- [14] Hanafi, Ridha; Fajar, Ari; Gandri H, Anfusa, 2012. Analisis dan Perancangan Enterprise Architecture untuk Mendukung Fungsi Terkait System Online Payment Point Menggunakan Framework TOGAF ADM pada PT Pos Indonesia. Bandung.
- [15] Sessions, R. (2007, May). A Comparison of the Top Four Enterprise-Architecture Methodologies. Diambil kembali dari Microsoft Developer Network: <https://msdn.microsoft.com/en-us/library/bb466232.aspx>