

Enterprise Architecture Design Vision Architecture and Business Architecture Stage Using Togaf Adm at SMA ABC

Ananda Cipta Pamungkas¹, Rosalin Samihardjo², Murnawan³
^{1,2,3}Information Systems Study Program Engineering, Widyatama University, Indonesia

Article Info

Article history:

Received Nov 27, 2024

Revised Jan 21, 2025

Accepted Feb 22, 2025

Keywords:

Enterprise Planning Architecture
Vision Architecture
Business Architecture
TOGAF ADM

ABSTRACT

Digitalization of Education in realizing the vision of an independent curriculum, encourages the development of educational unit technology. In realizing the development of information technology, enterprise architecture planning (EAP) is used to build a balance between business strategy and information technology in implementing integrated educational unit digitalization. This research was conducted at SMA ABC Bandung. The research method used is The Open Group Framework (TOGAF) Architecture Development Method (ADM) with the aim of explaining and providing a methodology in analyzing EAP and finding the vision architecture and business architecture periodically. The purpose of this study is to design information system management, direct business strategy with planning, information technology governance and educational unit management. Research results In the architectural vision, the research is able to identify the needs of organizational capacity that must be met to support the achievement of the vision and mission of SMA ABC Bandung. While at the Business Architecture stage, it produces a gap analysis (GAP analysis) of existing business processes, produces business process diagrams and functional decomposition diagrams to describe the main and supporting business processes at the school, produces stakeholder identification, organizational scope, and main business processes at SMA ABC, and formulates a catalog of principles that are the basis for the proposed enterprise architecture design.

This is an open access article under the [CC BY-SA](#) license.



Corresponding Author:

Ananda Cipta Pamungkas,
Information Systems Study Program Engineering,
Widyatama University,
Jl. Cikutra No.204A, Sukapada, Kec. Cibeunying Kidul,
Kota Bandung, Jawa Barat 40125, Indonesia
Email: ciptaananda67@gmail.com

1. INTRODUCTION

The role of digitalization in integrated technology is the main focus in implementing the vision of the independent curriculum at SMA ABC [1], [2]. The alignment between the vision architecture and the business architecture of SMA ABC must be in one framework to realize the vision, mission, goals, and targets of SMA ABC as stated in the work plan and curriculum of the educational unit [3]. Achievements towards the work plan and strategy of the educational unit must develop systematically with the development of a well-planned information system in realizing the vision and goals of education [4], [5].

According to [6] and [7] the designed information technology governance must be an added value in the management of enterprise architecture planning (EAP) at ABC High School so that technology system planning can be integrated with strategic planning which is the main goal of education. The problem in the implementation of enterprise architecture planning (EAP) at SMA ABC Bandung is that there is no design of enterprise information system architecture in the form of

a blueprint analysis design of the vision architecture and business architecture in developing alignment between information technology and a systematic approach in managing system and information assets, directing organizational strategy needs with planning, implementing information technology governance, and management of educational units that are aligned and balanced which are found in the annual work plan, mid-term work plan, and semester work plan in the SMA ABC Bandung institutional documents [8], [9], [10]. This research was conducted at SMA ABC Bandung, which is the first generation of driving schools in West Java Province, focusing on the development of enterprise architecture design stages with the TOGAF framework at the stages of preparing the vision architecture and business architecture [11], [12], [13].

According to [14] and [15] In previous research that linked the preparation of enterprise architecture planning (EAP) was still within the scope of general focus and concentration so that it became an analysis gap in the development and design of EAP at SMA ABC and in-depth study of architecture needed to be designed as one of the stages of analysis to improve the quality of the organization in terms of managerial aspects at SMA ABC Bandung. Based on the problems and phenomena that exist in the research object, the researcher took the initiative to design an analysis of the development of enterprise architecture planning (EAP) for organizational information systems at SMA ABC Bandung with the aim of producing a blueprint analysis design for the vision architecture and business architecture at the TOGAF ADM method stage with the title "Enterprise Architecture Design at the Vision Architecture and Business Architecture Stage Using Togaf ADM at SMA ABC" [16]. Based on previous research related to the enterprise information system architecture design method with the TOGAF ADM framework, this research focuses and is aimed at the vision architecture and business architecture as one of the bases for developing EAP at SMA ABC Bandung which is more dynamic and becomes a novelty in this research [17], [18], [19].

The selection of the TOGAF ADM method can provide a more detailed method in the development, management, and implementation of enterprise architecture at SMA ABC Bandung [20], [3], [21]. In addition, the TOGAF ADM method was chosen because of its flexibility in identifying various modeling techniques used in design, because the TOGAF ADM method can adapt to changes and needs during design in the organization [22], [23], [24]. To address this issue, a business architecture was designed using the AS-IS and TO-BE approaches. The AS-IS stage describes the current condition where business processes are carried out manually and fragmented. Based on the AS-IS analysis, it was found that many processes still need improvement, especially in terms of data integration and collaboration between school divisions. For example, the process of registering new students and managing student attendance that has not been well integrated between the administration and academic divisions results in delays in data reporting.

Through the TO-BE stage, a solution is proposed in the form of information system integration that allows real-time and centralized data management. By using TOGAF ADM, schools can create an architectural blueprint that includes various elements such as a business process catalog, relationship matrix, and data model that support faster and more efficient decision-making processes. This business architecture is also designed to support alignment between the school's business strategy and the information technology implemented.

The purpose of this study is to analyze and provide recommendations for designing enterprise information system architecture in the form of a blueprint analysis design for the vision architecture and business architecture using the TOGAF ADM method which is needed to support the achievement of the vision, mission and goals of SMA ABC Bandung [25], [26], [27]. According to [28], [10], and [29] In addition to the objective of developing enterprise information system architecture, the objective of this research also influences the design of information system management, directing business strategies with planning, information technology governance and management of educational units at ABC High School. The application of TOGAF ADM in the high school environment provides new value because the majority of previous research has only focused on universities or other large educational institutions [30], [31]. This study shows that TOGAF ADM is not only relevant in large institutions but can also be implemented in secondary schools to support digital transformation and alignment of business processes with the school's strategic vision.

Thus, this study provides a significant contribution to the understanding of the application of enterprise architecture in the context of high schools, and provides guidance that can be adapted by

other schools that have similar challenges. The resulting architectural model also allows for further improvements in the information technology aspect in the future, so that SMAN ABC Bandung can continue to grow and compete in this digital era.

2. RESEARCH METHOD

This research was conducted using the TOGAF ADM (The Open Group Architecture Framework) architectural development method. TOGAF is a framework that provides a design for providing a method and media tool to help the process of developing organizational architecture. [32], [33].

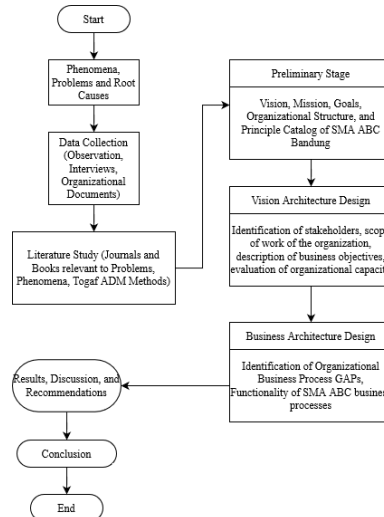


Figure 1. Research Framework

Based on Figure 1 above, this study began at the stage of the existence of phenomena, problems, and root causes at SMA ABC Bandung. After the researcher was able to define the problems and root causes at SMA ABC Bandung related to the organization of institutional management, the data collection stage was carried out by conducting direct observations and interviews. In addition, in-depth study of institutional documents at SMA ABC is needed to support the analysis and problem-solving process. After the researcher collected the data, the researcher conducted a literature study by analyzing books, journals related to the problems and existing methods. Next, the preliminary stage of the SMA ABC Bandung organization by defining the vision, mission, goals, and organizational structure so as to conclude the principle catalog of SMA ABC Bandung. After that, the analysis stage of the SMA ABC architectural design vision to identify stakeholders, the scope of the organization, the elaboration of business process descriptions, and the evaluation of organizational capacity. The next stage, the analysis of the organization's business architecture by identifying the GAP of the institution's business process analysis, and the functional business process of the organization at SMA ABC so as to produce a business process diagram and functional decomposition diagram as a result.

3. RESULTS AND DISCUSSION

At the results and discussion stage, the researcher produced several analyses that were used as blueprints for recommendations to companies or organizations at SMA ABC Bandung, as follows.

3.1. Preliminary

In the initial stage, the researcher analyzed the vision, mission, and goals of the organization at SMA ABC Bandung based on the results of observations, direct interviews, and reviewing the work plan documents and medium-term work plan of SMA ABC as follows:

1. Vision

"To create human resources with noble morals, Pancasila character, care about the environment, and excel in science and technology"

2. Mission

- a. Making religious values as a reference for good behavior, culture/Pancasila character, and work;
- b. Creating Educators and Education Personnel who have noble morals and Pancasila character;
- c. Creating students and education personnel who graduate with noble morals and Pancasila character, have national insight, and care about the environment;
- d. Building the character and ability of Pancasila student profiles Creating literate Educators and Education Personnel;
- e. Increasing the culture of love and care for the environment through the Adiwiyata School program;
- f. Developing the interests, talents, and potential of students to achieve academic and non-academic achievements at the national and international levels;
- g. Increasing the knowledge and professional abilities of educators and education personnel by improving and utilizing digital technology that is relevant to the Industrial Revolution 4.0 and society 5.0;
- h. Increasing excellent services in the governance of education and teaching; and
- i. Improving Model Schools/quality schools that become references/examples for other schools in developing IMTAK, IPTEK and Mover School Program learning.

3. Purpose

- a. Producing graduates who have noble morals, have the character of Pancasila student profiles, are environmentally cultured and responsible;
- b. Producing graduates who master the basics of science, technology, social sciences, and arts and culture to achieve achievements at the national level;
- c. Producing superior graduates, competitive in the fields of education and the world of work;
- d. Realizing educators, education personnel and students who are competent in their fields and have integrity and high work ethic;
- e. Making schools a second home for its citizens;
- f. Establishing partnerships with other stakeholders.

4. Organizational Structure

According to Decree Number 0189/O/1979 dated September 3, 1979 issued by the Ministry of Education and Culture regarding the unification of educational units under the PSMA field of the Ministry of Education and Culture, SMA ABC Bandung operates under the supervision and control of the West Java provincial education office. In addition, based on the work plan in the RKT, RKS, RKAS and RKJM (Medium Term Work Plan) for 2024 to 2028 at SMA ABC Bandung, there is an organizational structure that can be described in Figure 2 below.

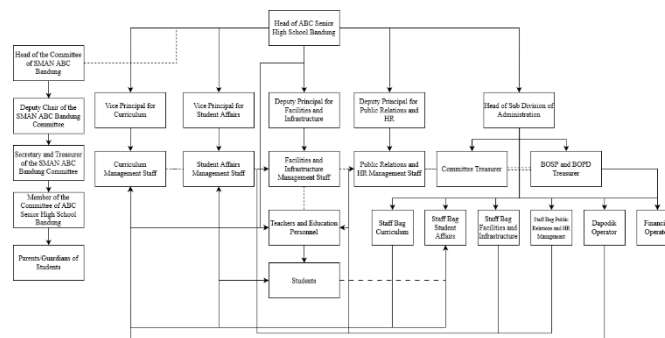


Figure 2. Organizational Structure of SMAN ABC Bandung

Based on Figure 2, SMA ABC Bandung is led by a Principal, with partners including the school committee. Under the leadership of the principal, the managerial structure is in charge of the curriculum, student affairs, facilities and infrastructure, public relations and HR, and administration in administering the organization of the institution. Each management sub-field at SMA ABC Bandung has a team or member who holds responsibility for each element of communication.

coordination, and organizational consultation. Based on the results of information related to the vision, mission, goals, and organizational structure of SMA ABC Bandung, an analysis of the principles catalog of SMA ABC Bandung was produced which can be seen in table 1 below:

Table 1. Principle Catalog Arsitektur Enterprise SMA ABC Bandung

No	Principles of Architecture	Purpose	Document
1	The architecture is designed based on the activities, goals, business processes, vision, mission and objectives of SMA ABC.	Supporting organizational operations in implementing integrated information technology	Work Plan Document for the 2024/2025 Academic Year, Medium-Term Work Plan for 2024 to 2028
2	The designed architecture has a data security system and ease of data access for continuity with the organization's vision and business.	The organization's efforts towards the trust of all stakeholders in the security of organizational data and the ease and limitations of integrated data access to information technology in making organizational decisions.	Work Program for the 2024/2025 Academic Year, Medium-Term Work Plan for 2024 to 2028
3	The application design against the vision architecture, and the business used must be integrated with the information technology that is facilitated.	Facilitate the improvement of organizational quality values towards the development of the vision, mission, goals and organizational structure of ABC High School.	Work Program for the 2024/2025 Academic Year, Medium-Term Work Plan for 2024 to 2028
4	Ease of understanding and management of the organization's vision and business architecture design	Efforts to increase the effectiveness and efficiency of business processes in improving the quality of organizational resources.	Work Program for the 2024/2025 Academic Year, Medium-Term Work Plan for 2024 to 2028

3.2. Vision Architecture

At the enterprise architecture vision stage at SMA ABC Bandung, it produces an analysis related to the Value Chain Diagram, Stakeholder Map Matrix, Solution Concept Diagram, the researcher explains the final result description which is used as a recommendation for designing enterprise architecture in the organization. The existing activities are divided into two groups, namely main activities and supporting activities, which are depicted in Figure 3 below.

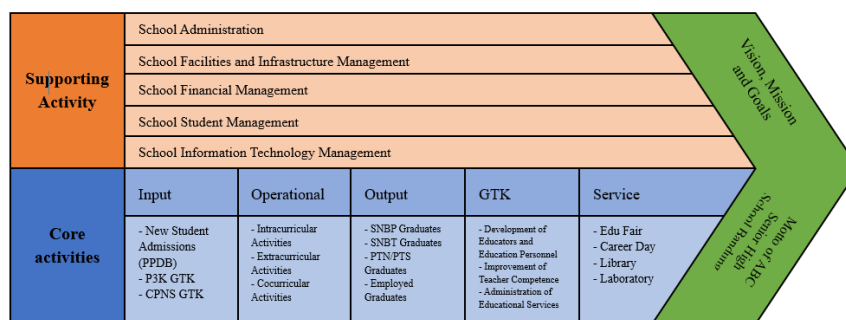


Figure 3. Value Chain SMAN ABC Bandung

Based on Figure 3 according to the results of direct observation, interviews and analysis of organizational documents, several things can be explained regarding the Main Activities, namely at the input, operational, output, GTK, and service stages. At the input stage, SMA ABC Bandung continues to strive for the acceptance of new students every year with various qualifications in each registration path, this is because it affects the achievements of SMA ABC Bandung in developing education at the West Java Province level.

Furthermore, in the operational part of the organization, SMA ABC Bandung optimizes all intracurricular, co-curricular, and extracurricular activities that are managed directly by the management and staff at the vice principal level. At the output stage, SMA ABC Bandung based on the vision, mission, and goals of the organization continues to map school graduates who enter state and private universities through various university entrance routes, in addition, SMA ABC Bandung seeks graduates who are interested in working in accordance with the fields of expertise of each graduate.

The GTK or Education Personnel Teacher Section, SMA ABC Bandung optimizes the development of teachers and education personnel in the school, through various programs stated in the work plan and activity plan at SMA ABC Bandung, this school continues to encourage operational Human Resources to continue to improve their abilities and expertise in fields according to their interests and talents.

Finally, in the operational part of the organization, SMAN ABC Bandung provides maximum service for tertiary level interests, the industrial world, libraries to increase interest in literacy and numeracy, and laboratories to increase research interest in every existing human resource.

In addition to the main activities, SMAN ABC Bandung maps out sub-organizational sections in supporting activities, including school administration to assist in the management and administration of the institution's organizational administration, infrastructure management to assist in organizing facilities at SMA ABC Bandung, financial management to assist in the management and planning, absorption, implementation, and evaluation of government assistance funds at the SMA ABC Bandung educational unit, student management to assist in the organizational stage of all student needs at SMA ABC Bandung, and the school information technology management section as a benchmark for the implementation of school digitalization against the suitability of the vision of the independent curriculum for the driving school program at SMA ABC Bandung.

Based on the main and supporting activities in the value chain at SMA ABC Bandung, the following is an IT Solution Diagram Concept that can support the achievement of the vision and mission of SMA ABC Bandung in Figure 4 below.

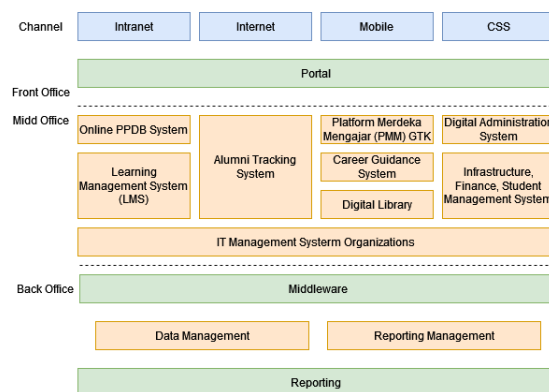


Figure 4. Solution Concept Diagram

Based on Figure 4 regarding the solution concept diagram for the main value chain management activities at SMA ABC Bandung, it can be described in Table 2 below.

Table 2. Description of Solution Concept Main Activity Diagram

Stage	Main Activities	Proposed IT Solution
Input	Acceptance of new students with various qualifications in each registration path.	- Integrated online New Student Admissions Information System (PPDB). - Cloud-based student database for effective storage and management of new student data.
Operational	Management of intracurricular, co-curricular and extracurricular activities.	- Centralized school management platform (e.g. Learning Management System, LMS).

Output	Monitoring graduates towards college or the world of work.	- Activity schedule management system, reporting, and activity evaluation. - Web-based alumni tracking system to map graduates' career and education paths. - Student performance assessment system to support success in the world of work.
GTK (Teachers and Education Personnel)	Development of the abilities and skills of teachers and education personnel.	- Online-based training system (e-learning) to improve teacher competency. - Application for human resource development management and performance evaluation of teachers and education personnel.
Service	Interest in higher education, industry, libraries, and laboratories.	- Career guidance service management system for college and industrial interests. - Digital library integrated with external resources.

In addition, based on Figure 4 regarding the solution concept diagram for supporting activities of value chain management at SMA ABC Bandung, it can be described in Table 3 below.

Table 3. Description of Solution Concept Supporting Activity Diagram

Supporting Activity	Proposed IT Solution
School Administration	- A digital-based school administration system that supports efficient management of personnel data, correspondence, and official documents.
Infrastructure Management	- IT-based school facilities and infrastructure inventory system to monitor asset usage and maintenance.
Financial management	- Software-based school accounting and financial planning system integrated with government aid fund management.
Student Management	- Digital-based student management application that records student development, absences, and extracurricular activities in real-time.
Information Technology Management	- Integrated IT system that supports school digitalization in accordance with the vision of the Merdeka Curriculum. - IT security systems to protect data.

Based on the vision, mission, objectives, principle catalog, vision architecture, solution concept diagram designed at SMA ABC Bandung for the management of enterprise architecture planning, vision architecture and business stages, a stakeholder map matrix is mapped to identify the roles and interests of the various parties involved in table 4 below.

Table 4. Stakeholder Map Matrix of SMA ABC Bandung

Category	Stakeholder	Role/Interest	Influence	Activity
Main Internal	Headmaster	The main leader responsible for strategic policies	High	Decision making related to vision, mission, education management strategy
Main Internal	Vice Principal (Curriculum)	Responsible for educational operations and curriculum	High	Managing intracurricular, co-curricular and extracurricular activities
Main Internal	Teachers and Education Personnel (GTK)	Direct implementer of education and operational manager	Medium	Development and implementation of teaching and learning processes, as well as GTK development programs
Main Internal	School Administration Staff	School administration manager and	Medium	Daily administration management, document

Category	Stakeholder	Role/Interest	Influence	Activity
		management support		management, facilities and infrastructure
Supporting Internal	Infrastructure Management	Ensure school facilities are available and functioning properly	Medium	Management of school facilities and infrastructure
Supporting Internal	Information Technology Management	Supporting school digitalization in accordance with the vision of the Merdeka curriculum	Medium	Implementation of IT systems and digitalization of educational processes
Supporting Internal	Financial Management	Budget management, aid fund evaluation, financial planning	High	Management of operational funds, government assistance, and education budgets
Supporting Internal	Student Management	Supporting all student needs, including student admissions and management	High	Management of the new student admission process and student needs services during the education period
Main External	Parents of Students	Direct recipients of educational outcomes	Medium	Provide support for student achievement and play a role in feedback on the quality of education.
Main External	Students	The main focus of educational activities at ABC High School	High	Following the educational, extracurricular and co-curricular processes
Supporting External	College	Provider of further education pathways for ABC High School graduates	Low	Supporting graduates who continue to higher education through certain pathways
Supporting External	Industrial World	Provider of employment for graduates who do not continue their education to college	Low	Opening opportunities for graduates who are interested in working according to the skills they have acquired
Regulation/Governance	West Java Provincial Education Office	Directors and policy makers of education at the provincial level	High	Providing direction, policies, and regulations related to educational operations at the high school level
Regulation/Governance	Local government	Providers of aid funds and strategic policies in school development	High	Supervision of the implementation of government assistance at SMA ABC

Based on table 4 above regarding the design of enterprise architecture at the vision architecture and business architecture stages using the TOGAF ADM framework at SMA ABC Bandung, in the stakeholder map matrix, the Principal as the main decision maker is responsible for strategic policies based on the school's vision and mission, while the Vice Principal manages educational operations including intracurricular, co-curricular, and extracurricular activities. Teachers and education personnel (GTK) focus on developing the teaching and learning process and improving human

resource competencies. External parties such as parents of students and students themselves are direct beneficiaries of education, with a high interest in the quality of education received. In addition, operational support from infrastructure management, information technology management, and student management also ensure that educational infrastructure and services run well, in line with the vision of the Merdeka curriculum and the school's digitalization program. The role of universities and the industrial world is also important in mapping further education paths and job opportunities for graduates. Therefore, this stakeholder map helps in understanding the needs and influence of each party, so that the enterprise architecture can be designed comprehensively to support educational goals at SMA ABC Bandung.

3.3. Business Architecture

At the business architecture stage, before the formation of information technology integration at SMA ABC Bandung, the following is a business architecture model of each core business process activity at SMA ABC Bandung based on the Value Chain Diagram with the old model.

3.3.1. Input Activities

In the Input Value Chain Diagram activity, table 5 explains the business process with the old model of the PPDB stage, P3K and CPNS GTK acceptance at SMA ABC Bandung.

Table 5. Business Process Core Activities Input Organization Value Chain Diagram

Type of activity	Activity Details
New Student Admissions	- Prospective students come to SMA ABC Bandung by submitting physical files to the registration desk - Registration service receives physical registration files and records them in the registration book manually - Verification service verifies and validates files manually - Verification and validation service informs validation results manually via the announcement board - Announcement service provides information on the results of the verification selection of registration file validation manually on the announcement board
Acceptance of P3K and CPNS Teachers and Education Personnel	- SMA ABC Bandung Personnel Service reports the number of Teacher and Education Personnel needs to the education office - The personnel service receives information related to the acceptance of P3K and CPNS teachers and education personnel manually in the form of physical information paper from the education office regarding the list of P3K accepted at SMA ABC Bandung - The personnel service verifies and validates data and HR needs for P3K and CPNS Teachers and Education Personnel at SMA ABC Bandung - The personnel service confirms to the education office the need for P3K and CPNS Teachers and Education Personnel - The P3K service receives the results of re-verification from the education office regarding the need for P3K and CPNS Teachers and Education Personnel - The personnel service files the need for P3K and CPNS Teachers and Education Personnel

3.3.2. Operational Activities

In the Operational Value Chain Diagram activity, Table 6 explains the business process with the old model of the Intracurricular, Co-curricular and Extracurricular Activity stages at SMA ABC Bandung.

Table 6. Business Process Core Activities Operational Organization Value Chain Diagram

Type of Activity	Activity Details
Intracurricular and Co-curricular Activities	- Curriculum Management Service provides reports on school education report cards related to the needs of intracurricular and co-curricular activities - Curriculum Management Service of SMA ABC Bandung maps the schedule of intracurricular and co-curricular activities manually for 1 full school year - Curriculum Management Service provides information to all learning stakeholders regarding the schedule of intracurricular and co-curricular activities manually for 1 school year - Teachers, Students, and Parents receive information regarding the scheduling of intracurricular and co-curricular activities manually using physical letters - Teachers, Students, and Parents provide confirmation if there is a discrepancy in the schedule provided - Curriculum Management Service updates the schedule for 1 week 1 time manually - Curriculum Management Service provides a report on learning outcomes to parents of students no later than 3 months 1 time
Extracurricular Activities	- Student Management Services reports the need for extracurricular activities based on the education report card - Student Management Services maps the extracurricular schedule for 1 full academic year - Student services opens manual consultation facilities for extracurricular actors to provide information on extracurricular needs - Student Management Services makes manual extracurricular activity reports - Student Management Services provides reports on the results of extracurricular activities to parents of students no later than 1 month once

3.3.3. Output Activities

In the Output Value Chain Diagram activity, table 7 explains the business process with the old model of the SNBP/SNMPTN, SNBT/SBMPTN, and Independent PTN Graduate Activity stages at SMA ABC Bandung.

Table 7. Business Process Core Activities Output Organization Value Chain Diagram

Type of Activity	Activity Details
Graduates of SNMPTN, SBMPTN, Independent State Universities	- Students report the results of their SNMPTN, SBMPTN, and Independent PTN exams to the Guidance and Counseling teacher manually - The Guidance and Counseling teacher performs data recapitulation manually - The Guidance and Counseling teacher performs data recapitulation report and reports to the School Management - The School Management opens a college entrance service based on the results of the analysis of the previous year's student graduation report manually
Graduates Working	- Students report graduate tracking to the Guidance and Counseling Teacher - The Guidance and Counseling Teacher summarizes and reports data and provides reports to the school management - The school management provides cooperation services with the Industrial World related to the results of the graduate competency needs Working at SMA ABC Bandung manually

3.3.4. GTK Activities

In the GTK Value Chain Diagram activity, table 8 explains the business process with the old model of the SNBP/SNMPTN, SNBT/SBMPTN, and Independent PTN Graduate Activity stages at SMA ABC Bandung.

Table 8. GTK Core Activity Business Process Organization Value Chain Diagram

Type of Activity	Activity Details
Development of Educators and Education Personnel	- Every educator and education personnel receives information on service training in order to develop individual competencies manually - Every educator and education personnel submits a manual registration to participate in competition training - Every educator and education personnel participates in training - Every educator and education personnel receives a certification of expertise according to the training capabilities that are followed
Teacher Competency Improvement	- Educators carry out teacher competency improvement planning - Observers carry out observations on each teacher in improving competency manually - Observers carry out reflections on observation learning manually with teachers - Observers carry out reports on the results of observations of improving teacher competency manually and record them
Administration of Educational Services	- Every educator and education personnel conducts manual learning and education management planning - Every educator and education personnel implements written learning and education management plans - Every educator and education personnel reports written learning and education management results to the principal

3.3.5. Service Activities

In the Value Chain Diagram Service activity, table 9 explains the business process with the old model of the Graduate Activity stages of Edu Fair, Career Day, Library, Laboratory at SMA ABC Bandung.

Table 9. Business Process Core Activities Service Organization Value Chain Diagram

Type of Activity	Activity Details
Edu Fair and Career Day	- All students participate in educational fair and career day activities to determine the follow-up to graduation - All students are given information on the college and industrial world registration preparation forms manually - Students are monitored manually regarding graduation plans by the BK teacher - The BK teacher manually summarizes student data
Library	- Proses Sirkulasi dan Kunjungan perpustakaan dilakukan secara manual dengan pembukuan - Pendataan buku perpustakaan dilakukan dengan sistem pencatatan pembukuan data perpustakaan - Perencanaan pengadaan fasilitas dan pelaporan kegiatan perpustakaan dilakukan secara manual menggunakan pembukuan fisik
Laboratorium	- Perencanaan pengadaan fasilitas laboratorium fisika, kimia, dan komputer dilakukan secara manual menggunakan pembukuan fisik - Pelaporan kegiatan laboratorium fisika, kimia, dan komputer dilakukan secara manual menggunakan pembukuan fisik - Pengajuan peminjaman ruangan laboratorium fisika, kimia, dan komputer dilakukan secara manual menggunakan pembukuan fisik

3.3.6. Technology Integration Business Architecture

Based on the analysis of architectural business needs in the architectural vision framework related to the Value Chain Diagram, Stakeholder Map Matrix, Solution Concept Diagram, an integrated business architecture framework is produced which includes core activities for input, operations, output, GTK, and services. Each stage is described in the blueprint of the BPMN business architecture analysis framework in this study. At the input stage, the business architecture at SMA ABC Bandung can be designed for integration with information technology as an effort in digitalized managerial management, as can be seen in Figures 5 and 6 below.

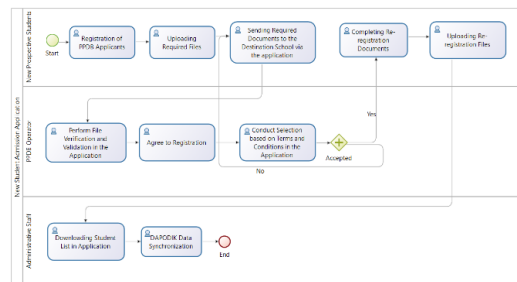


Figure 5. Business Architecture of Proposed New Student Admission Input Activities

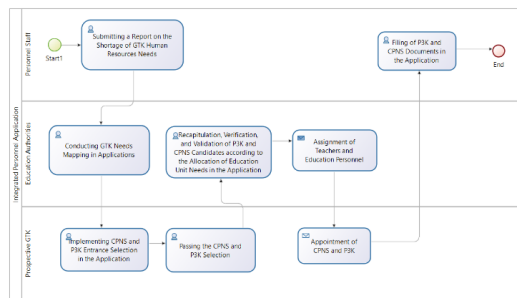


Figure 6. Business Architecture of Proposed CPNS and P3K Teacher and Education Personnel Recruitment Activities

At the operational stage, the business architecture at SMA ABC Bandung can be designed for integration with information technology as an effort in digitalized managerial management, as can be seen in Figures 7 and 8 below.

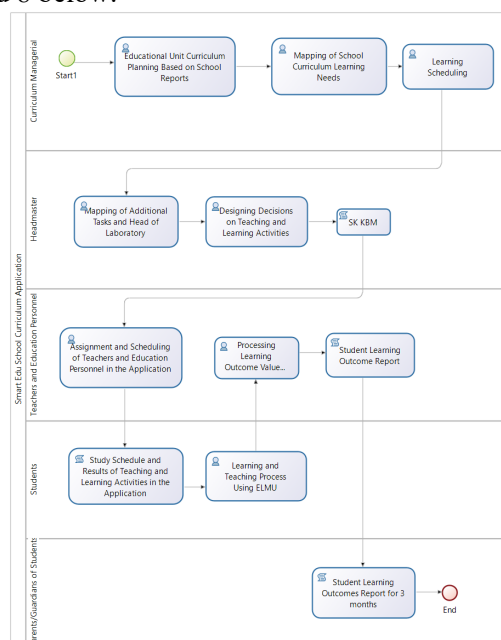


Figure 7. Business Architecture of Proposed Intracurricular and Cocurricular Activities

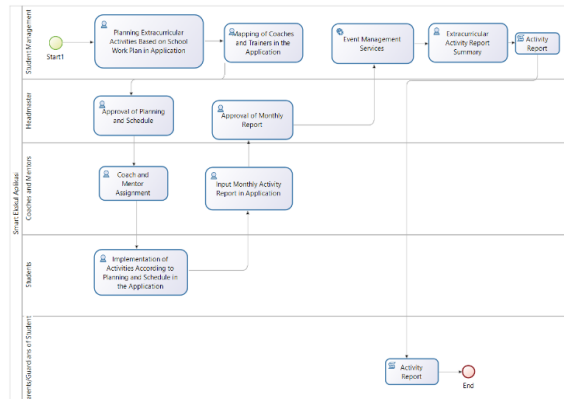


Figure 8. Business Architecture Proposed Extracurricular Activities

At the output stage, the business architecture at SMA ABC Bandung can be designed for integration with information technology as an effort in digitalized managerial management, as can be seen in Figure 9 below.

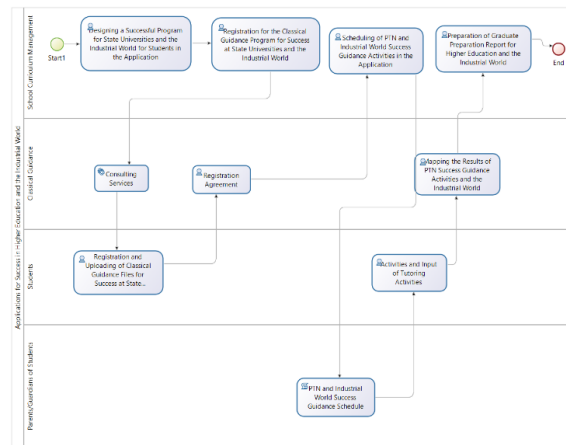


Figure 9. Business Architecture Proposed Successful Activities of Higher Education and Industrial World

At the GTK stage, the business architecture at SMA ABC Bandung can be designed for integration with information technology as an effort in digitalized managerial management, as can be seen in Figures 10, 11, and 12 below.

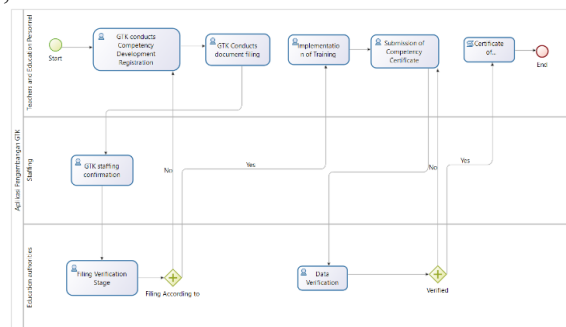


Figure 10. GTK Development Activity Proposed Business Architecture

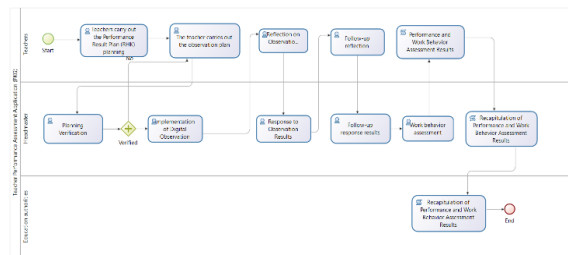


Figure 11. Business Architecture of Proposed Teacher Competency Improvement Activities (PKG)

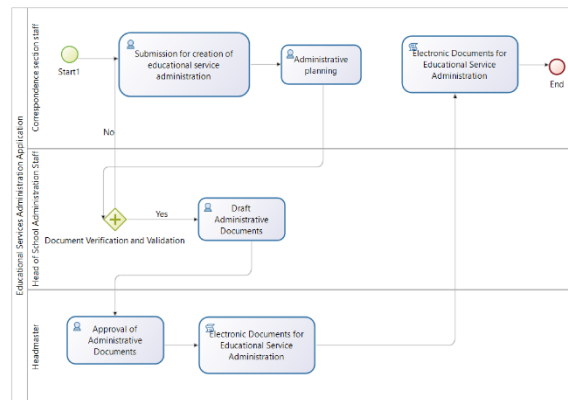


Figure 12. Business Architecture of Proposed Educational Service Administration Activities

At the business architecture service stage at SMA ABC Bandung, it can be designed towards integration with information technology as an effort in digitalized managerial management, as can be seen in figures 13, 14, and 15 below.

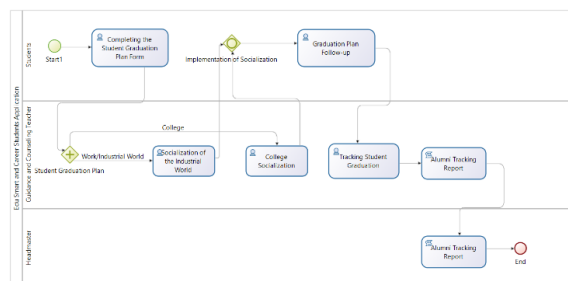


Figure 13. Business Architecture of Proposed Edu Fair and Career Day Activities

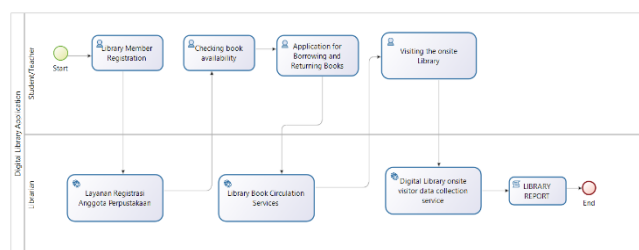


Figure 14. Business Architecture of Proposed Library Activities

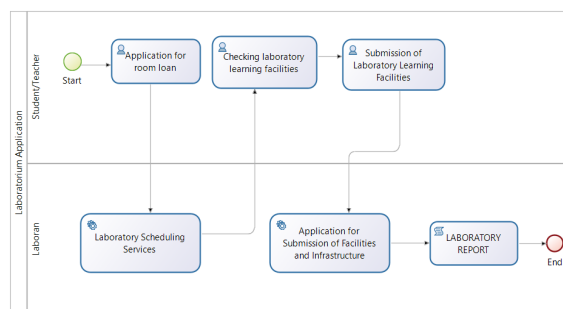


Figure 15. Business Architecture of Proposed Laboratory Activities

This study aims to design an enterprise architecture at SMA ABC Bandung through the application of TOGAF ADM, focusing on the Vision Architecture and Business Architecture stages. Based on the results of data collection involving observation, interviews, and analysis of institutional documents, it was found that there were a number of challenges in organizing institutional management that affected the effectiveness of school operations. This problem then became the basis for the development of a more structured enterprise architecture based on organizational needs.

In the initial stage, the researcher identified the phenomena and root problems that existed at SMA ABC Bandung related to the management of institutional management. The researcher then collected data through direct observation and interviews with related parties, and analyzed relevant institutional documents. The data was then studied in depth with a literature review to support an understanding of the existing problems and choose the right method to solve them, namely by using TOGAF ADM.

After the data was collected, the preliminary stage was carried out to define the vision, mission, goals, and organizational structure of SMA ABC Bandung. This process resulted in a principle catalog, which became the basis for developing an architectural design that was in line with the strategic direction and goals of the school. In the Vision Architecture stage, the researcher identified stakeholders, the scope of the organization, and described the main business processes at SMA ABC. Organizational capacity evaluation is also conducted to assess the organization's ability to achieve its vision and mission, as well as to formulate capacity requirements that must be met by the designed architecture.

The next stage, namely Business Architecture analysis, includes identifying gaps (GAP analysis) in the existing business processes at SMA ABC Bandung. This GAP analysis aims to identify areas that require improvement or enhancement, so that the new business architecture can overcome existing weaknesses. From the results of the GAP analysis, the researcher produced a business process diagram and functional decomposition diagram, which describe the main and supporting activities at SMA ABC Bandung, including administration, infrastructure management, finance, students, and information technology. These diagrams provide a clear picture of how SMA ABC Bandung's business processes work, and how each component in the organization contributes to achieving the school's goals.

As a result of this analysis, recommendations for enterprise architecture solutions are prepared, which integrate information technology to support the efficiency and effectiveness of school operations. In this case, the proposed enterprise architecture solution is expected to optimize the management of the SMA ABC Bandung organization, improve educational services, and strengthen synergy between all components of the organization. The application of TOGAF ADM in this study also shows how this framework can be used to design an architecture that is aligned with the vision and mission of the organization, as well as providing adaptive solutions to technological developments and ever-growing educational needs. This study also recognizes the importance of continuous evaluation of the implementation of the proposed architecture. Therefore, monitoring and improvement of the implementation of enterprise architecture must be carried out periodically, to ensure that the architecture implemented truly supports the achievement of the long-term goals of SMA ABC Bandung. It is hoped that the results of this study can provide a significant contribution

to improving the management of educational institutions, especially in the context of developing enterprise architecture in the educational environment

4. CONCLUSION

This study successfully designed an enterprise architecture at SMA ABC Bandung using the TOGAF ADM method, focusing on the Vision Architecture and Business Architecture stages in accordance with the objectives of this study. Based on the analysis of the phenomena and problems that exist at SMA ABC Bandung, it was found that the organization of institutional management still faces several challenges, which affect the effectiveness of operations and the achievement of school goals. Through a systematic approach, this study successfully identified stakeholders, organizational scope, and main business processes at SMA ABC, as well as formulated a catalog of principles that became the basis for the proposed enterprise architecture design.

At the Vision Architecture stage, this study identified the organizational capacity needs that must be met to support the achievement of the vision and mission of SMA ABC Bandung. Furthermore, at the Business Architecture stage, a gap analysis (GAP analysis) was carried out on the existing business processes, which produced a business process diagram and a functional decomposition diagram to describe the main and supporting business processes at the school. The results of this analysis are used to design an integrated enterprise architecture solution, which is expected to improve the efficiency and effectiveness of SMA ABC Bandung operations. Thus, this study concludes that the application of TOGAF ADM in designing enterprise architecture at SMA ABC Bandung can provide a structured and systematic solution in facing organizational challenges and supporting the achievement of the school's long-term goals.

Furthermore, the sustainability of the implementation of the enterprise architecture that has been designed in practice at SMA ABC Bandung needs to be considered. Researchers need to monitor and evaluate the effectiveness of the implementation of the proposed solutions, as well as identify areas that still require further improvement or optimization. Continuous evaluation of the implementation of this architecture will be key to ensuring that the implemented enterprise architecture truly supports the vision and mission of SMA ABC Bandung. In the long term, this research can contribute to the development of a more holistic enterprise architecture model based on the latest technology, in order to support more efficient, transparent, and responsive education management to the needs of the times.

REFERENCES

- [1] Syaddam, "Enterprise Architecture pada Perancangan Sistem Informasi Akademik Menggunakan TOGAF ADM 9.2 Syaddam 1)," *J. Ilmu Komput. Dan Teknol.*, vol. 4, no. 2, pp. 8–14, 2023, [Online]. Available: <http://creativecommons.org/licenses/by/4.0/%0Ahttp://ejournal.uhb.ac.id/index.php/IKOMTI>
- [2] A. C. P. Enok Nurjanah, (*KSP*) *SMA NEGERI 12 BANDUNG TAHUN AJARAN 2024 - 2025 SEKOLAH MENENGAH ATAS NEGERI 12 BANDUNG KOTA BANDUNG – JAWA BARAT*, no. 36. 2024.
- [3] M. I. Indrawan, F. N. Salisah, I. Maita, F. Muttakin, and E. Saputra, "Perancangan Enterprise Architecture Menggunakan Togaf Adm pada SMP Nurul Falah Pekanbaru," *JATISI (Jurnal Tek. Inform. dan Sist. Informasi)*, vol. 10, no. 1, pp. 768–782, 2023, doi: 10.35957/jatisi.v10i1.3534.
- [4] A. C. P. Enok Nurjanah, (*RKJM*) *SMA NEGERI 12 BANDUNG*, no. 36. 2024.
- [5] M. Sakmar, "Enterprise Architecture Information Technology Strategy Case Study PT. Hikmah Pointau," *J. Inf. Syst. Artif. Intell.*, vol. 4, no. 1, pp. 14–22, 2023.
- [6] N. Nurfadilah, A. F. Santoso, and F. Falahah, "Arsitektur Enterprise Pada Sistem Pemerintahan Berbasis Elektronik (SPBE) Pada Domain Proses Bisnis di Lingkungan Pemerintah Daerah Kabupaten Purwakarta," *e-Proceeding Eng.*, vol. 10, no. 2, pp. 1391–1402, 2023.
- [7] S. Nurul Marwiyah and C. S. Ophelia, "Perancangan Arsitektur Sistem Informasi Menggunakan Togaf ADM," *KLIK Kaji. Ilm. Inform. dan Komput.*, vol. 3, no. 6, pp. 1162–1169, 2023, doi: 10.30865/klik.v3i6.861.
- [8] X. Sika, L. Y. Astri, D. Kisbianty, R. Setiawan, and Irawan, "Implementasi Framework TOGAF ADM Bagian Kemahasiswaan Universitas Dinamika Bangsa Jambi," *J. Ilm. Media Sisfo*, vol. 18, no. 1, pp. 1–7, 2024, doi: 10.33998/mediasisfo.2024.18.1.1453.
- [9] D. P. Wirmasari, A. F. Santoso, and D. Praditya, "Analisis Dan Perancangan Arsitektur Perusahaan

- Menggunakan Kerangka Kerja Togaf 9.2 (Studi Kasus: Unit Human Capital),” *JUPI (Jurnal Ilm. Penelit. dan Pembelajaran Inform.)*, vol. 9, no. 1, pp. 168–180, 2024, doi: 10.29100/jupi.v9i1.4411.
- [10] M. Anwar Solihin, G. Firmansyah, M. Kailani Ridwan, S. Supardi, and D. Irawan, “Analisa Dan Perancangan Arsitektur Enterprise Menggunakan the Open Group Architecture Framework (Togaf) : Studi Kasus Koperasi Syariah Benteng Mikro Indonesia (Kopsyah Bmi),” *J. Sisfokom (Sistem Inf. dan Komputer)*, vol. 12, no. 1, pp. 145–151, 2023, doi: 10.32736/sisfokom.v12i1.1523.
- [11] R. R. Wiyatasari, R. Firmansyah, U. Irma, and M. Hanafiah, “Perancangan Interior Al Azhar International Islamic Boarding School Tangerang Putri Dengan Pendekatan Arsitektur Islam,” vol. 8, no. 6, pp. 4215–4230, 2022.
- [12] P. Sawitri, W. Indriyani, and Y. Anggraini, “Perencanaan Arsitektur Studi Kasus Perpustakaan Stmik Dumai Dengan Metode Framework Togaf,” *J. Sist. Inf. Kaputama*, vol. 7, no. 1, pp. 36–45, 2023, doi: 10.59697/jsik.v7i1.71.
- [13] K. R. Dinar, A. A. N. Fajrillah, and R. Hanafi, “Penyusunan Arsitektur Enterprise Pada Bidang Perindustrian Dalam Meningkatkan Stabilitas Perekonomian Jawa Barat Menggunakan Metode Togaf Adm 9.2,” *JUPI (Jurnal Ilm. Penelit. dan Pembelajaran Inform.)*, vol. 8, no. 1, pp. 218–229, 2023, doi: 10.29100/jupi.v8i1.3267.
- [14] R. Suryani, N. Arifin, I. Safi, and R. B. B. Sumantri, “Perancangan Sistem Informasi Sekolah Menggunakan Framework TOGAF ADM Studi Kasus : SMK Negeri 1 Purwokerto,” vol. 5, no. 2, pp. 13–19, 2024.
- [15] M. H. Selviana Yunita, “Analisis strategi perancangan arsitektur enterprise sistem informasi menggunakan togaf adm (studi kasus: tk tunas bangsa smart) 1.,” vol. 9, no. 3, pp. 1361–1373, 2024.
- [16] F. O. Dayera, Musa Bundaris Palungan, “G-Tech : Jurnal Teknologi Terapan,” *G-Tech J. Teknol. Terap.*, vol. 8, no. 1, pp. 186–195, 2024, [Online]. Available: <https://ejournal.uniramalang.ac.id/index.php/g-tech/article/view/1823/1229>
- [17] T. Susilowati, S. Sucipto, W. Widiyanto, and M. Dewi, “Penerapan Togaf Adm Pada Arsitektur Sistem Informasi Absensi Dan Penggajian Di Desa Sri Purnomo,” *J. Teknol. Dan Sist. Inf. Bisnis*, vol. 5, no. 3, pp. 234–241, 2023, doi: 10.47233/jteksis.v5i3.824.
- [18] V. No, J. Hal, and P. Setiawan, “Perancangan Enterprise Arsitektur Sistem Informasi Pada SMK Budi Utama Menggunakan Togaf ADM,” vol. 2, no. 2, 2024.
- [19] Y. Feriyanto, A. A. Budiman, and L. I. Maulidia, “Perancangan Arsitektur Enterprise Menggunakan TOGAF (Studi Kasus: Desa Sukahaji),” *J. Kaji. Ilm. Teknol. Inf. dan Komput.*, vol. 2, no. 2, pp. 50–56, 2024, doi: 10.62866/jutik.v2i2.117.
- [20] J. Jalaludin, L. Endahti, and D. Fatimah Zahra, “Perencanaan Arsitektur Enterprise Sistem Informasi Sekolah Menggunakan Togaf Adm,” *EDUSAINTEK J. Pendidikan, Sains dan Teknol.*, vol. 10, no. 3, pp. 922–942, 2023, doi: 10.47668/edusaintek.v10i3.883.
- [21] R. P. Aji, B. D. Putranto, and A. D. Pritama, “Implementasi Fremework TOGAF ADM untuk Perancangan Arsitektur Enterprise pada Desa XYZ,” *J. Ilm. IT CIDA*, vol. 9, no. 2, p. 97, 2023, doi: 10.55635/jic.v9i2.196.
- [22] Y. Wijayanti, A. W. R. Emanuel, and A. T. Hidayat, “Perancangan Arsitektur Enterprise Sistem Informasi Pengelolaan Kerja Praktik dan Tugas Akhir menggunakan TOGAF,” vol. 4, no. 1, pp. 47–53, 2024, doi: 10.59395/janitra.v4i1.182.
- [23] D. A. Oktaviani, M. Fahmi Nugraha, and T. Trianto, “Perencanaan Arsitektur Sistem Informasi Sekolah Menggunakan Metode Togaf di SMK PGRI 35,” vol. 3, no. 2, pp. 142–155, 2024, [Online]. Available: <https://jurnal.masoemiversity.ac.id/index.php/dimamu>
- [24] V. Syahro, R. Aprianto, B. Fajrina, S. Rahayu, M. A. Safitri, and P. Rahayu, “Redefinisi Pelayanan Kesehatan : Penerapan TOGAF ADM dalam Perencanaan Arsitektur Enterprise Puskesmas Mandiri,” vol. 10, pp. 1–7, 2024.
- [25] M. Baginda and T. Herdi, “Perancangan Arsitektur Enterprise Menggunakan TOGAF ADM (Architecture Development Method) Pada Yayasan Pelatihan dan Sertifikasi Perusahaan Air Minum,” *JOINS (Journal Inf. Syst.)*, vol. 8, no. 1, pp. 32–45, 2023, doi: 10.33633/joins.v8i1.7318.
- [26] Y. M. Brekmans Darkel, A. Wahyu Rahardjo Emanuel, A. Jaya Yogyakarta Jl Kesehatan No, K. Sikka, and N. Tenggara Timur, “Perancangan Arsitektur Enterprise Dengan TOGAF ADM dan ITIL V3 Tahap IT Service Design (Studi Kasus: Universitas Nusa Nipa) Enterprise Architecture Design with TOGAF ADM and ITIL V3 IT Service Design Stage (Case Study: Nusa Nipa University),” vol. 22, no. 2, pp. 373–387, 2023.
- [27] B. H. Pakarti, D. Alnazarul, M. A. S. Ibrahim, and A. T. C. Perdana, “Perancangan Arsitektur Sistem Informasi Enterprise Pada Balai Desa Simongagrok Kabupaten Mojokerto,” *JITTER J. Ilm. Teknol. dan Komput.*, vol. 3, no. 3, p. 1336, 2023, doi: 10.24843/jtrti.2022.v03.i03.p08.
- [28] M. K. Anam, R. D. Andhika, K. Andesa, H. Herwin, and A. Agustin, “Analisis Dan Perancangan

- Arsitektur Teknologi Pada Perguruan Tinggi Menggunakan Framework Togaf,” *Rabit J. Teknol. dan Sist. Inf. Univrab*, vol. 8, no. 2, pp. 173–183, 2023, doi: 10.36341/rabit.v8i2.3459.
- [29] B. A. Pramajuri, T. Hadyanto, and S. Syaddam, “Perancangan Arsitektur Enterprise Sistem Informasi Di Puskesmas Abc Menggunakan Togaf Framework,” *J. Teknoinfo*, vol. 17, no. 1, p. 17, 2023, doi: 10.33365/jti.v17i1.2238.
- [30] Siswanto and I. D. Sumitra, “Designing of enterprise architecture for vocational high school information system using TOGAF Architecture Development Method,” *Int. J. Educ. Inf. Technol. Others*, vol. 3, no. 2, 2020.
- [31] R. A. Hermawan and I. D. Sumitra, “Designing Enterprise Architecture Using TOGAF Architecture Development Method,” *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 662, no. 4, 2019, doi: 10.1088/1757-899X/662/4/042021.
- [32] V. Aderiandra, S. Mukaromah, and D. Ridwandono, “Perancangan Arsitektur Enterprise Menggunakan Framework TOGAF ADM Pada SMAN 3 Sidoarjo,” no. 3, 2024.
- [33] I. D. Murti Suyoto, I. Indra, S. Wedi, and K. Setiawan, “Perancangan Arsitektur Sistem dan Teknologi Informasi Menggunakan TOGAF ADM (Studi Kasus Kantor Pertanahan ABC),” *J. Teknol. Inf. dan Ilmu Komput.*, vol. 10, no. 4, pp. 909–918, 2023, doi: 10.25126/jtiik.20241046220.