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Enterprise Architecture Design in Sonic Advertising Company Using TOGAF Framework

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Abstract

In the contemporary landscape of intense business competition, effective advertising is paramount for the successful introduction of products. This study delves into the realm of Sonic Advertising, a prominent advertising agency situated in Purwokerto, with a specific focus on its print media advertising services. Despite the prevalence of the information technology era, Sonic Advertising has not fully embraced enterprise architecture, persisting with a reliance on manual processes. The research employs the TOGAF (The Open Group Architecture Framework) framework as a comprehensive tool to scrutinize and model the business processes within Sonic Advertising. The primary aim is to assess the company's current utilization of information technology and provide strategic guidance for the implementation of enterprise architecture. By doing so, the study aspires to contribute insights that can significantly enhance operational efficiency, positioning Sonic Advertising competitively in the dynamic business landscape. As the research unfolds, it seeks to shed light on the potential benefits and challenges associated with adopting enterprise architecture, ultimately offering valuable recommendations for navigating the evolving advertising landscape.

Keywords: Advertising, Sonic Advertising, TOGAF Framework, Enterprise Architecture

1. Introduction

Advertising will never be idle, given its function in introducing products with effective and efficient utility. The variety of products and services continues to expand, and each year sees the establishment of numerous companies with their flagship products. With more competitors, the competition intensifies, necessitating advertising strategies and concepts that can capture consumer interest. In today's advertising world, there is a growing need for advertising agencies with quality and professionalism to ensure that the advertisements they present to the public are precisely targeted [1][2].

The existence of an agency is closely tied to its clients, who are crucial in the advertising industry. Client revenue and loyalty are the primary goals for advancing and surviving in the competitive world of business. The communication strategy employed is crucial in retaining clients amid business competition from other competitors vying for client/customer trust. Advertising companies that are part of the Indonesian Advertising Companies Association (PPPI) are actively involved in the advertising industry. Agencies or companies like these are sought after by consumers to promote the products and services they offer. Competition among advertising agencies will always exist and increase year by year, with this escalation aimed at maintaining the existence of their advertising agencies [3][4].

Sonic Advertising, operating in the field of print media advertising services, is an advertising agency located in Purwokerto. It emerged due to market needs related to advertising and construction. The company's processes, starting from finance, ordering, marketing, sales, and promotion, have not fully embraced enterprise architecture to support its operations, as data handling is still mostly done manually. Therefore, the importance of modeling in this research is to determine the extent to which the company utilizes information technology in its activities. To support the implementation of enterprise architecture in this company, analysis and modeling are performed using the TOGAF framework [5][6].

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For the next step in studying fault spread and recovery strategy, the fault spread of the urban rail transit system is investigated. By simulating the fault-spreading process, relevant parameters of the system network after the fault spread can be obtained, and the fault spread law of the urban rail transit system can be derived from the changes in these parameters. Finally, an efficient post-fault recovery scheme is proposed to quickly recover the system after the fault spread using reasonable and efficient recovery methods.

The research presentation is structured as follows: Section 2 introduces the basic methods of the simulation system, Section 3 displays the simulation system implementation and analysis, and Section 4 concludes the paper and suggests future work.

2. Literature Review

2.1. Information System

An Information System encompasses a cohesive ensemble of interconnected components, including hardware, software, brainware, procedures, and rules. These elements are strategically organized and integrated to facilitate the seamless processing of raw data and facts. The primary objective is to transform this processed information into a valuable and actionable form, empowering organizations to effectively address and resolve challenges. By harmonizing the interplay between technological infrastructure, human expertise, and established protocols, Information Systems play a pivotal role in not only managing data but also in harnessing it to make informed decisions and optimize operational efficiency within an organization [7].

2.2. IT Concept

IT (Information and Technology) is an unofficial acronym in the Indonesian language. It serves as a comprehensive term for technology that aids humans in the processes of creating, modifying, storing, communicating, and/or disseminating information [8][9]. In the current era of globalization, the role of IT has become increasingly crucial as the backbone of digital transformation, playing a key role in connecting and advancing societies, businesses, and the public sector. With ongoing innovations in the field of IT, we witness new breakthroughs that reshape the way we interact, work, and access knowledge.

2.3. Strategic Planning

Planning is a process that involves determining the goals and objectives of an organization, developing comprehensive strategies to achieve the set goals, and creating a comprehensive plan hierarchy to integrate and coordinate activities [10].

Strategy can be defined as a set of integrated actions that serve as a tool to enhance the long-term success and strength of a company in achieving competitive advantage. Strategic planning is a business management activity aimed at ensuring that the company and all stakeholders involved work together to achieve the same business goals [11].

2.4. Enterprise Architecture

Enterprise architecture is a way to organize the elements of an enterprise information system, which can be a set of models and relationships between enterprise elements used in planning, designing, and implementing an enterprise's structure, business processes, information systems, and related infrastructure. Enterprise architecture is significant for an organization because one of its outcomes is the alignment between information technology and business needs. Some benefits of good enterprise architecture include more efficient IT operations, profitable investments, reduced risks of deviations from rules, faster and simpler operations, and more efficient business operations [12][13].

In planning and designing an enterprise architecture, a framework is needed. A framework is a blueprint that explains how information technology and information management elements work together as a whole. The blueprint serves as a guide for decision-makers in designing, planning, measuring, and monitoring the use of information technology in enterprise business processes. One framework used in planning and designing enterprise information system architecture is TOGAF [14][15].

2.5. TOGAF

TOGAF was developed by The Open Group in 1995. Initially used by the United States Department of Defense, TOGAF has since been widely adopted in various fields such as banking, manufacturing, and education. TOGAF is used to develop enterprise architecture, providing detailed methods and tools for implementation. This sets it apart from other enterprise architecture frameworks, such as the Zachman framework [1-5].

One advantage of the TOGAF framework is its flexibility and open-source nature. TOGAF provides a detailed method for building, managing, and implementing enterprise architecture and information systems, known as the Architecture Development Method (ADM). ADM is a generic method containing a set of activities used in modeling the development of enterprise architecture. This method can also be used as a guide or tool for planning, designing, developing, and implementing information system architecture for an organization [16].

TOGAF ADM is a flexible method that can identify various modeling techniques used in planning. This adaptability allows the method to be adjusted to changes and needs during the design process. TOGAF ADM also states clear visions and principles on how to conduct enterprise architecture development. These principles are used as measures to assess the success of enterprise architecture development within an organization and can be explained as follows:

1) Enterprise Principles: Architecture development is expected to support all parts of the organization, including units that require it.
2) Information Technology Principles: Directing the consistency of information technology usage throughout the organization, including units that will use it.
3) Architecture Principles: Designing system architecture based on the needs of business processes and how to implement them.

3. Methodology

3.1. Literature study and problem formulation

Library study serves to learn the basic theory to support the writing of journals, but it is used to gain an understanding of the TOGAF framework, the concept and stages of information system development. Data collection was conducted with interviews and direct observation of the organization under study

3.2. Analysis and design of enterprise architecture

In this research, researchers use TOGAF ADM method as a reference in planning business architecture. This analysis is a series of work performed by TOGAF, where the stage consists of 9 stages in a cycle. But in this research will be analyzed to 4 stages only, that is Preliminary Phase, Architecture Vision, Business Architecture, Requirement Management and Opportunities and Solution.

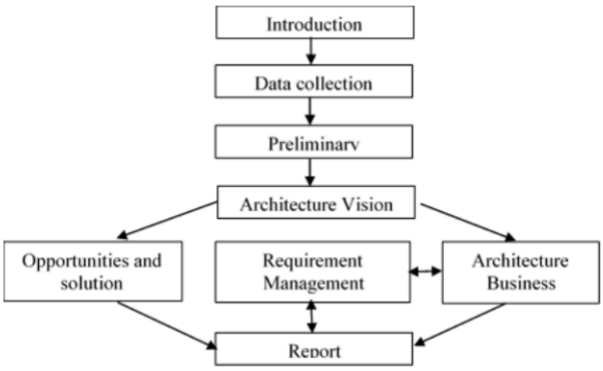

Figure 1. Research Steps.

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4. Results and Discussion

4.1. Preliminary phase

The preliminary phase of business process architecture planning at Sonic Advertising involves determining the scope of the organization, which encompasses all activities and business processes within the institution, identified through interviews with department heads and the Chairman. Additionally, stakeholders relevant to the enterprise architecture planning process are identified using an analysis tool such as the RACI Chart, with their roles specified accordingly, as shown in Table 1.

Table 1. RACI chart analysis results.

Role	*Stakeholder*		
	Chairman	Head of Division	*Enterprise architect*
Building an architectural vision	A, C, I	C	R, I
Building an architectural business	A, C, I	C	R
Building an architectural information system	A, I	C, I	R
Building information technology architecture	A, I	C, I	R

Source: Results analysis with RACI chart.

The roles of stakeholders involved in the business process architecture planning at Sonic Advertising are defined as follows: Responsible (R) individuals perform tasks, Accountable (A) individuals are ultimately responsible for the completion of the task, Consulted (C) individuals provide input and opinions on the task, and Informed (I) individuals receive updates on the progress of the task. The framework employed for the planning process is TOGAF ADM version 9, encompassing stages such as the preliminary phase, architecture vision, business architecture, and Opportunities and Solutions, with a focus on requirement management derived from business strategy. The planning also considers government regulations such as "*UU Nomor 12 Tahun 2012 tentang Pendidikan Tinggi dan Permendikbud No. 50 Tahun 2014 tentang sistem penjaminan mutu pendidikan tinggi.*" Tools utilized for building business process architecture include Business Process Modelling Notation (BPMN), specifically BPMN 1.1 within the Enterprise Architect (EA 8) 8 software, facilitating the modeling of business processes through flowcharts for ease of understanding. Additionally, the principles of architecture at Sonic Advertising are established.

Table 2. The principles of architecture.

Type of Principle	**Name of Principle**
Business principles	a. Main b. conformity of IT and business c. Business continuity d. Development of appropriate technology standards and organizational policies
Data Principles	a. Data is an asset b. Data shared c. Defining the data d. Data security e. Data confidentiality
Application Principles	a. Supports mobility of users b. Ease of use
Technology Principles	a. Capacity management b. Interoperability c. Needs-based change

4.2. Requirement management

Requirement Management in the business process architecture planning at Sonic Advertising is essential for aligning organizational needs with data requirements during the ADM stage. The process begins with identifying the core business of the organization through interviews and preliminary observations involving various stakeholders, including the head and Chairman of STIKES. This step aims to understand the organization's type and prioritize the design model accordingly. The core business of Sonic Advertising is examined through a value chain diagram depicting main activities and supporting sections, providing a detailed overview of its operations.

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Subsequently, organizational issues are identified based on interview results and observations of business processes within XYZ STIKES. Performance analysis reveals weaknesses such as information incompatibility between sections, leading to delays in service delivery and internal communication. Information analysis highlights manual calculations as a weakness, potentially resulting in error-prone reports and inadequate customer information. Economic analysis emphasizes the high paper consumption of outdated processes, particularly in correcting mistakes. Security analysis underscores the need for a backup system to mitigate the risk of data loss or damage inherent in manual archival storage. Efficiency analysis exposes inefficiencies stemming from manual systems, affecting work productivity and interdepartmental coordination. Additionally, service analysis emphasizes the direct correlation between organizational development and service quality, indicating that manual systems hinder employee performance and service delivery speed. These identified issues serve as critical considerations in the subsequent stages of business process architecture planning to devise effective solutions and improvements for Sonic Advertising.

4.3. Architecture vision

At this stage of business process architecture planning, crucial steps involve profiling the organization, identifying stakeholders and their needs, and assessing the current state of business architecture. Stakeholders with vested interests in Sonic Advertising are identified, including the Chairman, Assistant Chairmen, heads of various departments, employees, lecturers, and education personnel. The current business processes are then defined through a combination of interviews and observations, particularly focusing on the employment section of Sonic Advertising. This identification aims to pinpoint existing problems and constraints, facilitating the development of business solutions grounded in information systems, as outlined in the subsequent table.

Table 3. Identify current conditions

Activity	Obstacles	Solution	Type of Service
Civil Service Management and General Administration	Employee recruitment process, career ladder, study assignment, personnel completeness data and pension application still using manual process	- Utilization of software to automate the process of management of civil service and general administration and storage using a database. - Making SOP in managing staffing	Procurement of employee applications
	The process of reporting and performance evaluation based on the target achievement of each indicator is not supported by data or information	- Utilization of the application to monitor the activities of lecturers & employees throughout the company - Utilization of applications to create lecturer & employee performance reports.	Procurement monitoring application and employee performance evaluation
	The data processing of employee absenteeism is still manual	Employee attendance process automation	Procurement application that integrates with HR management tool of finger print
Financial management	Payment of salary, honorarium and incentives on the process is less effective The process of financial reporting, financial administration services students, tax reporting and accounting process are also less effective	- Utilization / procurement of software and hardware to automate and integrate transaction processing and payroll - Making Standard Operating Procedures (SOP) in performing the financial management process.	Procurement of integrated financial applications

The value chain analysis at Sonic Advertising is delineated into main and supporting activities, providing a comprehensive understanding of the institution's operational structure. This analysis, depicted in Figure 2, serves as a foundational framework for identifying areas of strategic importance and optimizing organizational efficiency.

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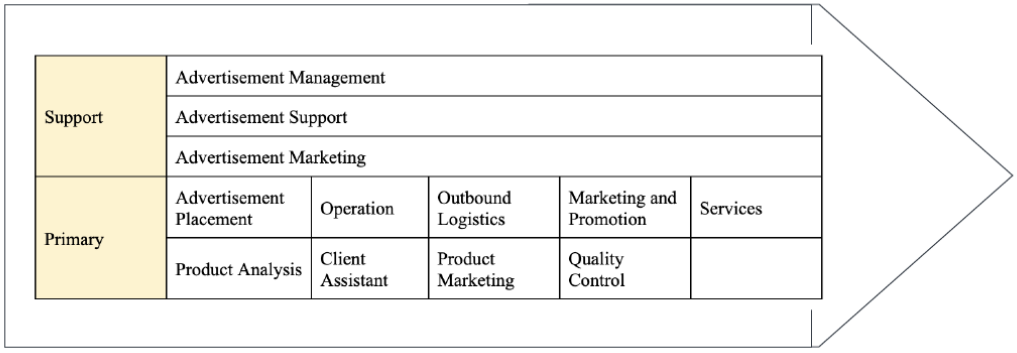

Figure 2. Value chain analysis.

Additionally, the solution concept diagram, derived from interviews and observations within Sonic Advertising, presents a synthesized overview of proposed solutions within the business architecture planning, as illustrated in Figure 3. This diagram not only addresses identified issues within the institution but also delineates the communication pathways among applications, data storage processes, system security measures, and network configurations. Furthermore, it encapsulates architectural principles aimed at fostering data sharing and integration across applications, facilitating expedited and accurate reporting tailored to management needs, thus enhancing service delivery to stakeholders.

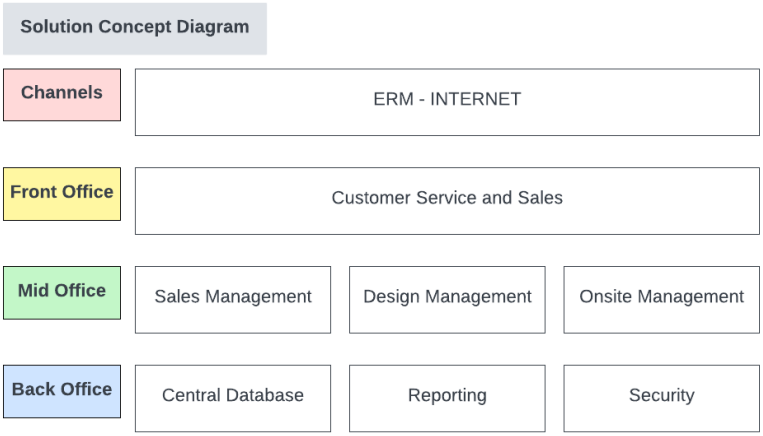

Figure 3. Solution concept diagram.

4.4. Preliminary phase

The stage of business architecture within Sonic Advertising encompasses the evolution of the current organizational structure and the implementation of strategies to align with business objectives and strategic goals. Initially, the movers, goals, and objectives of Sonic Advertising are defined, outlining the purpose and target of the organization, as depicted in Table 4. Subsequently, gap analysis is conducted to identify discrepancies between the existing business processes and desired outcomes, utilizing BPMN tools to delineate areas for improvement, as illustrated in Table 5. The findings reveal inefficiencies in staff allocation, process effectiveness, automation opportunities, and information integration across departments.

Table 4. Organization definition/purpose/target/drivers.

Organization	**Sonic Advertising**
Purpose	Provide advertisement services for customer
Target	Improved quality of service
Drivers	Enterprise architecture planning

Table 5. Business gap analysis.

Category	Business Gap Analysis
	Findings
People	- Staff sometimes still do work that is not actually their duties, so that in certain parts less focus with the work. - There are no employees who are experts in the field of IT to conduct supervision and control system information technology the company
Process	Business processes are ineffective and efficient
Tools	The existence of processes that have not been in automation
Information	Not yet integrated information between parts / implementing units

Following the gap analysis, a roadmap candidate is determined to address the identified gaps and streamline business processes for enhanced efficiency and effectiveness, as outlined in Table 6. This roadmap highlights the need for process optimization, automation implementation, and improved information integration, alongside addressing staffing issues to ensure proper task allocation and expertise within IT supervision. Moreover, in the Opportunities and Solutions phase, constraints and corresponding solutions are identified to mitigate the challenges highlighted in the gap analysis, as presented in Table 7.

These solutions include recruitment strategies to address staffing shortages, business process optimization initiatives, automation tool development, and information integration processes to enhance overall organizational performance and service delivery. Through these comprehensive analyses and strategic planning initiatives, Sonic Advertising aims to optimize its business architecture, streamline operations, and improve service quality to meet stakeholder expectations and strategic objectives.

Table 6. Determining the roadmap candidate.

Sequence	Roadmap Candidate
	Findings
Process	Business processes are ineffective and efficient
Tools	The existence of processes that have not been in automation
Information	Not yet integrated information between parts / implementing units
People	- Staff sometimes still do work that is not actually their duties, so that in certain parts less focus with the work. - There are no employees who are experts in the IT field to supervise and control the information technology system in the company

Table 7. Identify business constraints and solutions on business architecture.

Category	Findings	Solution
People	- Staff sometimes still do work that is not actually their duties, so that in certain parts less focus with the work. - There are no employees who are experts in the field of IT to conduct supervision and control system information technology the company	- Recruit employees in parts that are still short of employees - Make the main task and function of each position
Process	Business processes are ineffective and efficient	Performing ineffective and efficient business process improvement in accordance with business process architecture planning by: elimination, integration, simplification and automation
Tools	The existence of processes that have not been in automation	Making tools for ease in doing business process automation
Information	Not yet integrated information between parts / implementing units	Performed the information integration process and created a document of information flow related to enterprise architecture

5. Conclusion

In conclusion, the enterprise business process architecture design, employing The Open Group Architecture Framework Architecture Development Method (TOGAF ADM), aligns well with the analytical approach undertaken in this research, particularly considering the organizational nature of Sonic Advertising and its integration of information technology within its operations. The gap analysis conducted has highlighted several key areas requiring attention and strategic solutions within Sonic Advertising's business architecture. These include the imperative to recruit additional staff to address shortages in various departments, the establishment of clear roles and responsibilities to enhance accountability, and the optimization of business processes to improve efficiency and effectiveness. Moreover, the identified solutions encompass the development of tools for streamlining business process automation and the integration of information across departments, thus laying a solid foundation for the advancement of Information Systems/Information Technology within the organization. Overall, the blueprint generated through this business architecture planning process serves as a valuable guide for future development initiatives, facilitating informed decision-making and ensuring alignment with organizational goals and objectives.

5. Declarations

5.1. Author Contributions

Conceptualization: Y. P., R. P., and R.M. R.; Methodology: R.M. R.; Software: Y. P.; Validation: Y. P., R. P., and R.M. R.; Formal Analysis: Y. P., R. P., and R.M. R.; Investigation: L.A.; Resources: B.W.P.; Data Curation: B.W.P.; Writing Original Draft Preparation: L.M. and Y. P.; Writing Review and Editing: L.A. and Y. P.; Visualization: Y. P.; All authors have read and agreed to the published version of the manuscript.

5.2. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

5.3. Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

5.4. Institutional Review Board Statement

Not applicable.

5.5. Informed Consent Statement

Not applicable.

5.6. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper

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