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A TOGAF-Based Approach to Developing an Enterprise Architecture Design for Majelis Teater Selangor, Malaysia

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Abstract— The need for Information Technology to support an organization's business processes must be clearly defined so that development targets can be aligned with the organization's needs and capabilities. The Selangor Theatre Council (MTS) Malaysia is an organization that coordinates theater arts in Selangor, Malaysia, which has 12 theater branches. To facilitate organizational promotion, activity promotion, and good data integration, technology utilization is required. This study uses the Design Science Research (DSR) method with stages of identifying problems and objectives, developing design, presenting results and evaluating, and the TOGAF Framework for designing Enterprise Architecture Design. The results of this study are in the form of enterprise architecture design recommendations. At the problem identification stage, data on the need for information technology utilization in each business process was obtained by 74% through a questionnaire survey. At the design development stage, resulting in an Architecture Vision, a formulated strategy identification is carried out so that the vision, mission and objectives of the organization can be achieved by analyzing internal and external conditions and the Value Chain strategic grid. Business architecture design is carried out by mapping the ongoing business processes with the development plan and the readiness of existing resources in MTS so that GAPs will be found. Data/information architecture design maps information needs in each business process. Application architecture design maps application development needs and technology architecture design maps the needs of the technology used. In the final stage, the design results are presented using the results presentation technique and filling out a questionnaire for compliance with the results of 89%.

Keywords— Enterprise Architecture, TOGAF Framework, Majelis Teater Slangor (MTS), Design Science Research, Technology Information

I. INTRODUCTION (*HEADING 1*)

The need for Information Technology to support an organization's business processes must be well described so that development targets can be adjusted to the needs and capabilities of the organization [1][2][3]. This can be implemented by creating a strategic plan for the use of Information Technology in an organization with Enterprise Architecture Design. Enterprise Architecture is a field of science that studies the framework of an organization as a whole, including principles, business process modeling, information system design models and information technology to support the organization's business processes and the achievement of its vision, mission and goals [4][5].

Majlis Teater Selangor (MTS) is an arts and cultural organization with a significant responsibility for preserving and developing local culture in Malaysia. MTS currently manages 12 branch theaters across the country. With the changing times, MTS surfaces the challenges of modernization and digitalization, which require changes in the way the organization operates. The increasing number of activities, the increase in membership, and the intensification of community interaction have driven the need for a system capable of managing all these aspects efficiently and in an integrated manner.

To address these challenges, MTS initiated the development of a comprehensive information system. This system is itendes to enhance operational efficiency to strengthen communication among members, support performance management, expand the reach of arts and culture promotion, and provide faster and more responsive public services. The development process, however, requires a strategic and sustainable approach is required to ensure the system truly aligment with the organization's long-term vision.

This study employs of the Enterprise Architecture (EA) approach to align the information technology and information systems in supporting business processes at MTS so that vision, mission and objectives of MTS can be accomplished. In this research, the TOGAF (The Open Group Architecture Framework) approach will be used as the framework for implementing EA at MTS. The EA design with TOGAF is expected produce a company strategic plan in optimizing the use of Information Technology ultilization, increases organizational adaptability, and fosters service innovation [6][7][8].

This research was conducted in three stages,: (1) identyfing user requitments regarding tecnology to preparation to generate feedback on user needs for using of technology and information systems to support business processes, (2) the stage design, which of mapping business processes, technology and information system design and recommendations for company strategy (3) the evaluation stage to assess the usefulness of the recommendation results. The results of this research are in the form of enterprise architecture design recommendations for company strategies in utilizing technology and information systems. The form of recommendations provided is in the form of MTS vision architecture design, business architecture design, data/information architecture design and technology architecture design. The results of this research can assist MTS in developing and implementing organizational business processes that align with the advancement of information technology while remaining consistent with the vision, mission and objectives of MTS.

Through the application of TOGAF, MTS can design an architectural blueprint that not only supports technical needs for intance an online ticketing system or membership database, and establishes a strong foundation for social, cultural, and technological integration. TOGAF enables the identification of the needs of all stakeholders, values-based strategic planning, and implementation in accordance with the principles of good organizational governance.

Using TOGAF is expected to help MTS establish a comprehensive, strategic, and sustainable digital transformation path. This step is crucial to realizing MTS's vision as a leading, adaptive, and relevant theater arts organization in the digital age, while remaining rooted in the rich local culture that is its core identity.

II. Research Methods

This research uses the Design Science Research (DSR) method. DSR is an approach method for developing a model/application/prototype in solving problems by approaching users [9][10]. There are three stages of research carried out in this study, namely: 1) Problem Identification and Motivation, 2) Define the Objectives for a Solution, and 3) Development of Enterprise Architecture Design. The research design is explained in Figure 1 below:

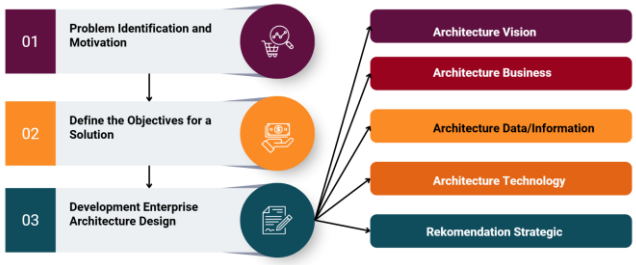

Figure 1. Research Steps

1. Problem Identification and Motivation

   At this stage, the Vision, Mission, and Objectives of MTS were identified. To assess the need for Enterprise Architecture development, identification was carried out through online questionnaires and system request identification with MTS.

2. Define the Objectives for a Solution

   At this stage, a review of documents and ongoing business processes is carried out so that solutions can be formulated to be provided to MTS in implementing Enterprise Architecture.

3. Development Enterprise Architecture Design

   At this stage, a design is created from the results of the assessment carried out using the TOGAF Framework. The TOGAF Framework is a framework used to develop enterprise architecture designs that can flexibly adapt to organizational needs [11][12]. The TOGAF Framework has 9 phases described in Figure 2, namely: 1) Preliminary, 2) Architecture Vision, 3) Business Architecture, 4) Information System Architecture, 5) Technology Architecture, 6) Opportunities and Solutions, 7) Migration Planning, 8) Implementation Governance, 9) Architecture Change Management and Requirement Management.

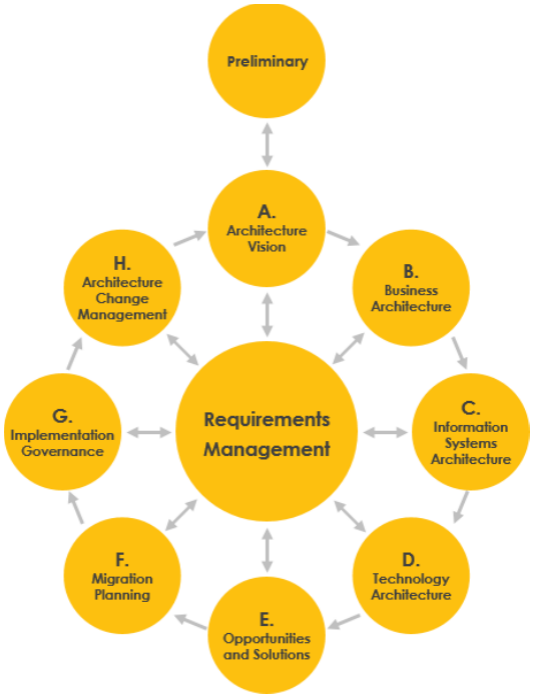

Figure 2. TOGAF Framework

In this research, only 5 TOGAF phases were passed from several phases, including: Preliminary Phase, Architecture Vision, Business Architecture, Information Systems Architecture (Data & Application) and Technology Architecture.

III. Results and Discussion

EA modeling uses the TOGAF framework to support implementation and policy in the MTS Malaysia. The process carried out in EA modelling stages includes :

A. Problem Identification and Motivation

At this stage, business process needs are assessed and identified, aligned with the organization's vision, mission, and goals. The assessment involves direct observation, interviews, and questionnaires to obtain identification based on requests from MTS. The results of the identification request are presented in Table 1 below:

Table 1. Identification request

Identification indicators	Descriptions	Value
Organizational business process review	Conducting tracing and review of business processes running in MTS with the aim of integrating all information provided to each group so that it can be coordinated centrally.	17%
Utilization of information technology	Assessment and identification of the use of information technology in several business processes at MTS so that they can be mapped properly and have positive investment value.	37%
Risk management	Identify risks that arise from the use of information technology to support business processes.	13%
Document	Creation of blueprint documents as a technical basis for managing business processes and utilizing information technology at MTS	7%
Percentage Value		74%

Table 1 shows four indicators that need to be assessed to ensure MTS can achieve its vision, mission, and organizational goals. The assessment was conducted through a survey of 12 MTS theater group coordinators. The business process assessment will redefine existing business processes at MTS to ensure proper data/information integration across all branches.

The use of information technology is indeed a primary goal of MTS in supporting ongoing business processes. Promotion, marketing, and theater ticket reservations and sales are among MTS's priorities. By utilizing technology, risks are expected to be minimized, thereby maximizing goals. Documenting the proposed design recommendations is expected to serve as a reference for policymaking and a guideline for ongoing development.

B. Define the Objectives for a Solution

At this stage, an assessment of all business processes running at MTS is conducted. The business processes at MTS are described in Table 2 below:

Tabel 2. MTS Business Process Identification

Business Process	Definition	Solution
Theater performance management	Managing promotions and theatrical performance schedules through pamphlets or flyers traditionally, due to the lack of human resources who have the skills to manage information by utilizing technology.	Create a policy for the use of information technology for the business process of show promotion, scheduling, ticket ordering and online show ticket sales.
Promotion and relations with partners	Creating promotional content, managing social media and building relationships with sponsor partners	Providing assistance to young people to use digital media as a promotional tool on social media
Theater membership management	Coordinating theater membership in 12 branches	Create a policy for utilizing information technology to accommodate membership data so that membership development in each branch can be properly controlled.
Organizational administration and financial management	Carrying out administration, correspondence and financial management at MTS with a reporting system in the form of documents from each branch	Create a policy for utilizing information technology to integrate administrative and financial management at each branch so that reports can be integrated at each branch in a transparent manner.

Table 2 above explains the four main business processes currently in place at MTS. The assessment of each business process is tailored to the needs of EA development by making changes to application development policies for the theater performance management, theater membership management, and organizational financial administration. Meanwhile, the promotion and partner relations business processes are more focused on strengthening human resources to master digital media as a material processing tool, enabling them to provide digital information for social media.

C. Development Enterprise Architecture Design

In the Enterprise Architecture Design development phase, the TOGAF framework approach is used, limited to five stages. The results of EA development in each phase are as follows:

1. Preliminary

At the preliminary stage, an assessment of the MTS organization was carried out. MTS is one of the largest and most influential non-governmental organizations (NGO) in the world of performing arts in Malaysia, especially in the field of theater. Together with Majlis Theater Kuala Lumpur, MTS is at the forefront of efforts to develop, preserve and commercialize theater arts in Malaysia. Founded with the aim of enriching the nation's cultural treasures,

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The identification results formulated 4 main business processes in MTS and enterprise development solutions are explained in table 2. Based on the solutions formulated according to organizational needs, 6 main business processes in MTS were formulated, namely: 1) Show scheduling, 2) Online promotion, 3) organizational data integration, 4) administrative management, 5) financial management, 6) public relations management and 7) human resource management.

2. Architecture Vision

At the architectural stage, the vision is described by outlining the Vision, Mission, analyzing internal conditions, external conditions and mapping the results of activity identification with the Value Chain Strategic Grid.

The Selangor Theatre Council (MTS) is an organization committed to developing, advancing, and preserving the art of theatre in Selangor. To achieve this goal, MTS has formulated a vision, mission, and organizational strategy that serve as the foundation for all activities and decision-making. The MTS Vision, Mission, and Strategy are outlined in Table 3 below:

Tabel 3. Identification of MTS Vision, Mission and Strategy

Vision	Mision	Strategic
To become a leading theatre organization in Selangor that is financially strong, competitive and plays an active role in the preservation and development of Malay theatre arts and culture through moral and material support and cross-sector collaboration.	Actively and sustainably mobilize and advance the art of theatre in Selangor.	Providing community and theater training to increase the capacity of artists.
	Developing, maintaining and preserving Malay theater culture.	Promoting theater arts and arts culture to the wider community through social media, websites, and offline activities.
	Fighting for the rights and interests of theater artists in Selangor	Introducing and preserving the culture and arts typical of Selangor.
	Creating a healthy theater ecosystem through maintenance, development and promotion (3P).	Establishing cooperation, collaboration, and partnerships with various parties such as the government, corporations, and arts communities.
	Providing moral and material contributions as well	Maintaining transparency in the organizational structure,
	Opening new opportunities for the advancement of theater in Malaysia	Community activities, as well as ticket and membership transactions, both online and offline

The results of the strategy formulation in Table 3 reveal several strategies that MTS needs to implement to achieve the organization's vision and mission. To support the achievement of the vision and mission and to monitor internal and external systems, internal and external factors were identified. The results of this identification are explained in Table 4 below:

Tabel 4. Internal and External Condition Analysis

Internal Condition
Strength
a. A strong artistic spirit b. A strong desire to advance and preserve the art of theater c. High public interest in the art of theater
Weakness
a. Not involving tech-savvy youth b. No documented recordings of performances c. Business processes have not been digitized d. Promotion and public information are still lacking
External Condition
Threat
a. Competition from private promoters in theatrical performances b. Production of modern films that divert public interest
Opportunity
a. Declining interest in theater performances b. Decreasing partnerships and sponsorships

The mapping of strategies to be used by MTS in achieving its vision and mission, as shown in Table 3, is categorized into primary and support activities in the form of a Value Chain Strategic Grid. The categorization is explained in Figure 3 below:

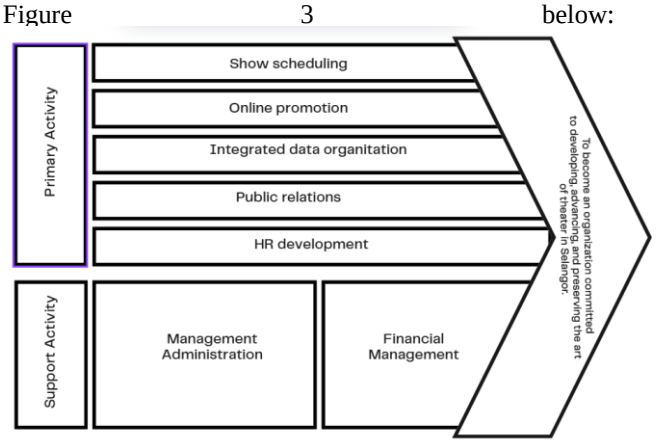

Figure 3 Value Chain Strategic Grid

Value chain Strategic Grid is a model used by organizations to describe the supply chain of primary activities and supporting activities so that organizations can understand the interaction of inputs and outputs that run in the organizational network [13][14][15][16]. In Figure 3, it is explained that there are 5 Primary Activities and 2 Support Activities to support the supply chain of each activity in MTS. Primary activities consist of theater scheduling activities to facilitate coordination between branches to monitor the schedule of performances to be held, online promotion by utilizing information technology so that it can expand the reach of promotions, integrated data organization is used for transparency of existing data in each branch, public relations needs to be improved in each human resource so that they are able to establish cooperation with partners and there needs to be an increase in the competence/expertise of existing human resources in managing digital media-based information so that they are able to package performance information on social media more attractively.

Meanwhile, the support activity includes two activities: centralized administration management, ensuring proper integration of various administrative tasks and prompt implementation. The second activity is centralized and

transparent financial management, ensuring the financial support of the performances.

3. Business Architecture

Business architecture modeling is created using the Business Process Model and Notation (BPMN) model. BPMN notation is a modeling that describes every business process running in an organization from start to finish, taking into account the integration of data/information/activities that occur in each process [17][18][19]. The notation of the business processes running in MTS is described in Figure 4 below:

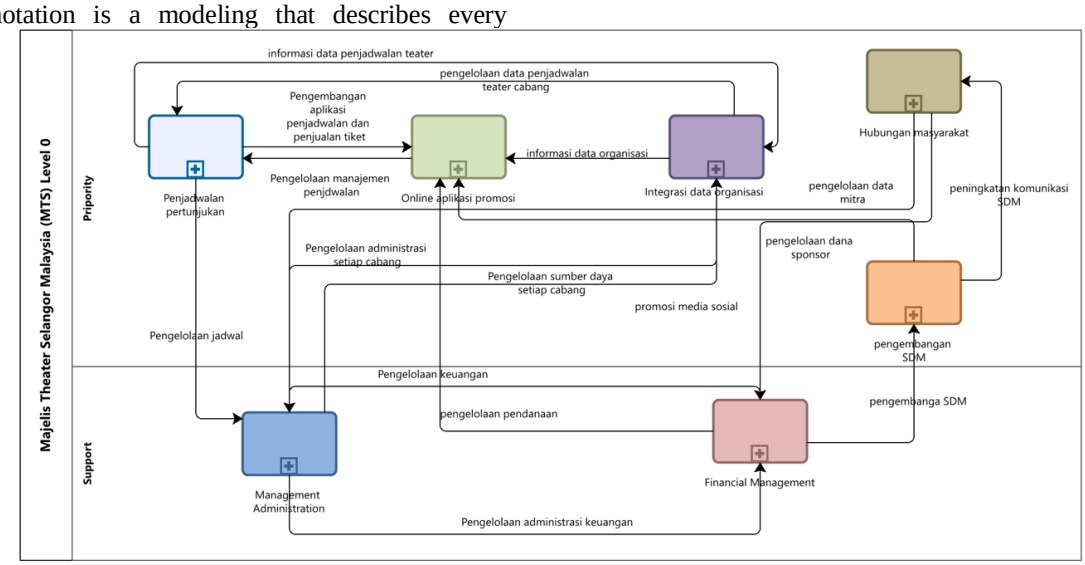

Figure 4. BPMN notation on MTS Malaysia

Figure 4 illustrates the integration of each business process running in MTS. The business processes depicted start at level 0 and describe all processes running in MTS. By depicting the business processes, MTS management and stakeholders can easily identify each event within MTS. From the business process analysis in Figure 4, five business processes were identified that require support with information technology-based application development.

4. Information Systems Architecture

Based on the mapping of application development needs for business processes at MTS, five applications were formulated to be developed: an administration management application, a financial management application, a promotion management application, a membership management application, and a ticket sales management application. The interrelationships between the applications are explained in Figure 5 below:

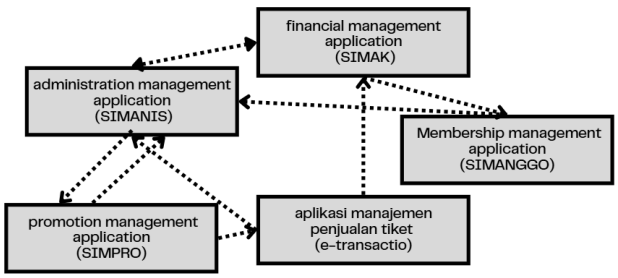

Figure 5. Application Integration Diagram

Figure 5 illustrates the relationships between applications to be developed in MTS. In developing an application architecture, it is necessary to clearly describe the relationships between applications so that during the development stage, the required data/information flow does not become invalid data. The derivative of the application integration diagram can clearly depict good data relationships so that redundancy, duplication, and abnormal data can be minimized.

Of the five proposed applications for development, a remapping can be carried out so that MTS will develop applications that are prioritized to support urgent business processes. The recommended short-term application developments are a promotion management application and a theater ticket sales application. This consideration takes into account the resource capabilities of MTS as an independent institution that receives funding from sponsors and ticket sales profits. The development of these promotional applications is expected to further expand the scope of promotions.

5. Technology Architecture

In the technology architecture design stage, the technology design required to develop an information technology-based EA will be described. The technology architecture design is explained in Figure 6 below:

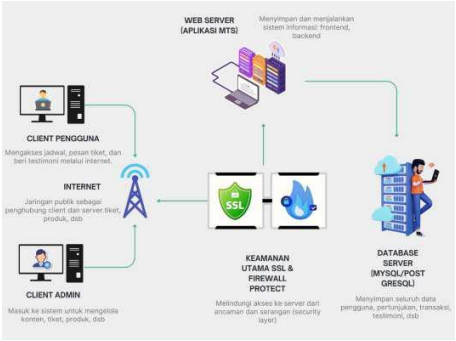

Figure 6. Design Technology Architecture

It is recommended that several applications be developed online to support business processes and expand promotional scope. Server requirements are mapped by identifying the maximum capacity required to support fast and accurate information delivery and processing. Clients and end users are defined by considering minimal devices, ensuring that a wide range of users can utilize existing technology to access theater information on MTS.

D. Evaluation

The final evaluation stage was conducted to assess the usefulness of the formulated strategy for each user. This involved conducting interviews and completing a survey with 10 policy-making authorities. The evaluation points are explained in Table 5 below:

Table 5. Evaluation

Identification indicators	Descriptions	Value
Organizational business process review	Conducting a business process review and grouping it into primary and supporting activities. This is done to align the business process overview with the organization's goals and strategies.	20%
Utilization of information technology	Identifying five business processes that can be supported by the use of information technology. Improving human resource competency in utilizing digital media to present information, thereby becoming a key promotional point through social media.	30%
Human Resources	Approaching youth to preserve culture with a modern approach through information technology	16%
Transparent administration and financial management	Formulate every process in managing administration and finance so that MTS can become an independent organization that has advantages and good quality.	13%
Organization management	Establish good relations between branches, with the aim of increasing solidarity	10%
	Percentage Value	89%

Based on the evaluation results outlined in Table 5, it can be concluded that MTS recommends implementing EA in its organization.

E. Recommendation

Based on the evaluation results, short-term recommendations for EA development are formulated as follows:

Identification indicators	Descriptions	Recomendation
Organizational business process review	Conducting a business process review and grouping it into primary and supporting activities. This is done to align the business process overview with the organization's goals and strategies.	Grouping business processes into primary and supporting activities and translating them into BPMN notation models so that stakeholders can easily learn the process flow.
Utilization of information technology	Identifying five business processes that can be supported by the use of information technology. Improving human resource competency in utilizing digital media to present information, thereby becoming a key promotional point through social media.	Developing 2 priority applications, namely SIMPRO and e-transaction to support the business process of ticket promotion and sales.
Human Resources	Approaching youth to preserve culture with a modern approach through information technology	Conducting digital media and social media content training for young MTS members periodically once every two weeks
Transparent administration and financial management	Formulate every process in managing administration and finance so that MTS can become an independent organization that has advantages and good quality.	Streamlining existing filing and creating administrative visualizations to facilitate communication between branches. Implementing financial transparency between branches and expanding sponsorship partners.
Organization management	Establish good relations between branches, with the aim of increasing solidarity	Expanding the network of collaboration with community organizations, academics, entrepreneurs and cultural figures
Percentage Value		89%

IV. CONCLUTION

This research was conducted at MTS to develop an Enterprise Architecture design. There are 5 strategies that MTS can implement to improve the promotion sector, ticket sales, human resource management, utilization of information technology and organizational management formulated to support the achievement of MTS's Vision, Mission and Goals. In developing Enterprise Architecture there are 5 steps taken, namely preliminary, architecture vision, architecture business, information system architecture and technology architecture. The results of the design created were evaluated by stakeholders at MTS and produced a value of 89% which indicates a recommendation worthy of being continued.

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