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# Applying the Zachman Framework to Enterprise Architecture in E-Commerce Retail Services

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**ABSTRACT**

Zachman Framework is an architectural framework used to analyze and organize the various perspectives involved in a system. In the context of AliExpress's retail services, the application of the Zachman Framework can provide a comprehensive understanding of the system, facilitate coordination between business entities, increase operational efficiency, promote continuous development and innovation, and assist in better risk management. In implementing it on AliExpress, the Zachman Framework helps in understanding the business entities involved, such as suppliers, customers, deliveries, and sellers, and identifying their roles and interactions. Through in-depth analysis, this framework enables AliExpress to better coordinate business activities, increase synergies, and reduce bottlenecks. In addition, the Zachman Framework also allows AliExpress to analyze and understand their operational processes from various perspectives, such as business, technology, and data perspectives. With a better understanding of their systems, AliExpress can identify areas where operational efficiency can be improved, optimize processes and increase productivity.



## 1. INTRODUCTION

In the fast-evolving landscape of global digital commerce, e-commerce platforms are required to continuously adapt their systems and strategies to ensure competitiveness, operational efficiency, and seamless customer experiences. AliExpress, as a leading international platform, operates within a complex digital ecosystem that necessitates strong integration between business functions and IT systems. This complexity makes Enterprise Architecture (EA) a critical strategic instrument to align technology capabilities with business objectives. Among various EA frameworks, the Zachman Framework is widely recognized for its structured, multidimensional approach to modeling enterprise components. Prior studies have applied this framework to digital commerce environments and confirmed its relevance in supporting system clarity and organizational alignment (Malyzhenkov et al., 2018; Nasution et al., 2018; Li et al., 2019).

However, the use of the Zachman Framework in implementing EA on global e-commerce platforms such as AliExpress has not been widely studied. Therefore, this article aims to be able to analyze and evaluate the application of the Zachman Framework in implementing EA on AliExpress. Although specific studies on AliExpress are limited, prior research has demonstrated that the Zachman Framework can effectively align business objectives with IT architecture in various enterprise contexts. For instance, Iyamu (2018) introduced a structured approach for large-scale EA implementation using Zachman, while Nogueira et al. (2013) showed its adaptability in resource-constrained technology enterprises (Iyamu, 2018; Nogueira et al., 2013).

Several related studies on the Zachman Framework in EA and e-commerce can be found in international and national literature. For example, Hamdan et al. (2019) analyzed the use of Zachman Framework in EA in the financial industry, and Hidayanto et al. (2016) proposed an EA framework for cloud-based e-commerce companies. Aliexpress is a platform that allows users to shop digitally with a business-to-consumer (B2C) model, where in the business-to-consumer model, a business sells directly to consumers with a smaller number of units , (Hamdan et al. 2019; Hidayanto et al. 2016).

The AliExpress platform is widely recognized for offering low-cost products, making it a popular destination

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for global online shoppers. Despite facing occasional issues such as fraudulent sellers, the platform has established robust systems for dispute resolution and buyer protection, which have helped it maintain trust and a strong reputation among users (Huang et al., 2022). Unlike Amazon, which operates both as a platform and as a direct retailer by selling its own products, AliExpress primarily functions as a two-sided marketplace, merely facilitating transactions between third-party sellers and buyers. This intermediary model allows AliExpress to avoid inventory management while supporting a wide product variety, aligning with the platform-based business approach (Li, 2018).

In addition to the above, Aliexpress also has regulations / mandatory provisions for sellers and buyers that are quite unique, namely Aliexpress does not allow foreign companies / not from China, to be able to sell on their platform, and for buyers they prohibit buyers from within China. This raises some good and bad opinions, the bad opinion of this is that customers find it difficult to verify the seller because of the difficulty / lack of information that can make the seller truly trustworthy, plus there is a language barrier between buyers who are all from outside China and sellers who are dominant in Mandarin, but Aliexpress can once again handle this problem quite well, by proving that the goods purchased can be guaranteed to reach the buyer so that it can maintain its reputation as one of the largest e-commerce platforms today (Li, 2016; Reikowska, 2017).

The good opinion of this aliexpress business model, comes from the support of the people in China where they support this business model because they think that with this business model, small businesses in China can get big profits, without having to be overshadowed by competition from large companies in China. And although Aliexpress is often considered a shopping place with a negative stigma due to the lack of clarity of seller information in foreign languages so that people are afraid of being threatened and because it comes from China which is famous for kw and low quality products (Hong, 2015).

Although some scam sellers still exist, products on the AliExpress platform have generally demonstrated reliable quality and seller credibility, supported by buyer protection mechanisms and customer reviews. Over time, AliExpress has built trust through early demand signals and reputation systems that help distinguish trusted sellers from fraudulent ones (Bai et al., 2018). As a result, the platform has become one of the most popular and widely used e-commerce services in regions such as Brazil, Russia, Europe, and parts of North America, where consumers are drawn to its competitive pricing and global product availability (Lukicheva and Semenovich, 2019).

Also in luring new customers and regular customers to continue shopping at Aliexpress, they provide free shipping with standard Aliexpress shipping conditions, namely if the delivery time is around 20-35 days, Aliexpress has also begun to expand its market reach to the Asian region, especially Southeast Asia (SEA), but only time can decide how successful Aliexpress will be in its expansion into the Southeast Asian region, especially Indonesia, but considering that most Indonesians shop by choosing bahrang with a low budget, Aliexpress has a solid advantage in achieving its success in the Indonesian market (Rabbani et al., 2023; Shia et al., 2016).

This study aims to conduct a literature review and provide an analysis of how the Zachman Framework can support AliExpress in the implementation of Enterprise Architecture (EA), particularly in aligning business processes, data management, application systems, and IT infrastructure. By examining this framework in the context of a complex global e-commerce platform, the findings of this study are expected to offer insights that contribute to the broader understanding and advancement of EA practices within international digital marketplaces such as AliExpress.

## 2. METHOD

This research uses an approach that refers to the Zachman Framework, a framework developed by John Zachman to describe the overall organizational architecture. This framework was chosen because of its ability to map various important elements in the enterprise system in a structured and comprehensive manner. In addition, this research is also supported by literature study and document analysis methods to gain a deeper and more accurate understanding of the framework implementation, especially in the context of retail services such as AliExpress (Iyamu, 2018).

The literature study was conducted by exploring various sources such as scientific journals, books, and electronic articles that discuss the Zachman Framework and its application in the retail world. Through this method, researchers gained a theoretical understanding of the structure and working principles of the framework, as well as similar relevant studies for comparison. The literature reviewed also includes best practices in the application of the Zachman Framework so that it can be effectively applied to the AliExpress case study (Supriadi and Amalia, 2019).

The document analysis method is used to examine various documents related to the implementation of the framework on the AliExpress information system. This framework does not focus on the order of implementation,

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but rather ensures that all organizational perspectives are covered, namely Planners, Owners, Designers, Builders, Subcontractors, and Users. By using this approach, organizations can design information systems that are complete, easy to understand, and aligned with existing business processes (Martuti et al., 2020).

The application of the Zachman Framework allows AliExpress to map various operational aspects, both in terms of data and functions. For example, product data such as categories, prices, and descriptions can be mapped from a data perspective, while the process of uploading products by sellers and transactions by consumers is analyzed from a functional perspective. Many organizations choose this framework to build an enterprise architecture that is adaptive to evolving business and information technology needs.

## 3. RESULTS AND DISCUSSION

Similar to online cinema ticketing app M-TIX, TIX ID is one of the Indonesian apps that offers a new experience in buying cinema tickets, with a total of 5 million users on the play store. However, TIX ID still has a much larger user base than other similar apps such as CGV Cinemas, which has 1 million users, Cinepolis Indonesia, which has 1 million users, and BookMyShow, which has 500,000 users (Ditazha et al., 2020).

Users can find out what films are playing, schedules, and news about various films and actors on TIX ID in addition to buying tickets (Aya, 2018). In terms of payment, TIX ID is different from other similar apps. DANA digital wallet, which can be topped up with a minimum of Rp 10,000, is used as a payment method in TIX ID. In addition, the DANA digital wallet balance in TIX ID can be used in other DANA-affiliated services including Bukalapak, Lazada, and Google Play. It can be noticed how TIX.ID uses the Zachman Framework to carry out its responsibilities and achieve its goal as an internet-based digital platform for cinema ticket buyers.

### 3.1. Analysis Results of Zachman Framework Implementation on AliExpress

AliExpress' implementation of the Zachman Framework helps in understanding and managing the various aspects related to their retail business as a whole. Zachman Framework is a framework used to analyze, design, and implement enterprise architecture with a structured and holistic approach. In the context of AliExpress, it is important to explore the different perspectives in the Zachman Framework, which include Executive Perspective, Business Management Perspective, Architect Perspective, Engineer Perspective, Technician Perspective, and Enterprise Perspective. In the Executive perspective, it is necessary to understand the scope of AliExpress's business and provide a contextual view of the company. The Business Management Perspective requires a deep understanding of the AliExpress business model and provides a conceptual view of the company(Sembiring et al., 2019).

Architect Perspective helps in developing system models that build a logical view of the company. Engineer Perspective focuses on developing technology models that provide a physical view of the company. Technician Perspective deals with the detailed representation of specific business items in the context of the enterprise. Finally, the Enterprise Perspective provides a working view of the enterprise from the perspective of users, such as employees, partners, or customers. To better visualize the use of the Zachman Framework on AliExpress, the following table provides a detailed description in understanding the role and contribution of each perspective in the context of AliExpress.

**Table 1.** Application of Zachman Framework on AliExpress

| | What (data) | How (fungtion) | Where (network) | Who (human) | When (time) | Why (motivation) |
|---|---|---|---|---|---|---|
| Excecutive Perspective | Describe the scope of AliExpress business, including product sales, order management, payment, logistics, and | Define business strategy, manage business operations and decisions, optimize customer | Shows the geographic location of AliExpress' main business and the relationship between activities | Represent AliExpress upper management and metrics to measure their capabilities and | Determine operational schedules and time criteria for AliExpress business | Explained AliExpress' business objectives, goals, business plans, and the rationale behind the |

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|---|---|---|---|---|---|---|
| | customer service. | experience. | within the organization. | performance. | processes. | organization's decision-making and knowledge architecture. |
| Business Management Perspective | Identify products and categories offered by AliExpress, target markets, and business policies. | Define marketing strategy, product development, business analysis, and risk management. | Shows the location of physical stores, distribution centers, and customer touch points. | Represent AliExpress business management team and decision making related to managing the business. | Determine the schedule for AliExpress product promotion, campaign launch, and business performance analysis. | Express market needs and wants, industry trend developments, and business strategies to achieve AliExpress' competitive advantage. |

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|---|---|---|---|---|---|---|
| Architec t Perspect ive | Describe AliExpress' information system architecture, including components, integration, security, and interoperabilit y. | Build system models that describe the functions and data flows in AliExpress informatio n systems. | Shows the logical structure of the AliExpress information system, including the components and the relationships between them. | Represent the informati on systems architects responsibl e for the design and integratio n of AliExpres s systems. | Determin e AliExpres s informati on system design and developm ent schedule. | Ensure the quality and reliability of AliExpress informatio n systems, and ensure that system architectur e supports business objectives and organizatio nal strategy. |
| Enginee r Perspect ive | Describe the technology infrastructure used by AliExpress, including networks, servers, databases, and other technology platforms. | Build technology models that support AliExpress infrastruct ure and technology needs. | Indicates the location of data centers, servers, and technology infrastructur e used by AliExpress. | Represent the technolog y team responsibl e for the implemen tation and maintena nce of AliExpres s technolog y infrastruc ture. | Determin e the schedule for technolog y implemen tation and regular maintena nce of AliExpres s infrastruc ture. | Ensure a reliable, scalable and high security technology infrastruct ure to support AliExpress operations. |
| Technici an Perspect ive | Documents specific technical details of AliExpress business | Implement technical designs, develop code, and perform | Shows technical details of system components and | Represent the technical team involved in | Determin e the schedule of software developm | Ensure that the technical details of AliExpress system |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | items, such as data structures, interface design, and programming logic. | software testing and maintenance. | hardware/software configuration at a detailed level. | software development and maintenance of the AliExpress system. | ent, testing, and routine maintenance. | implementation and maintenance are properly performed in accordance with business needs. |
| Enterprise Perspective | Provides an overall view of system operations and usage from the perspective of a user, such as an employee, partner, or customer. | Use AliExpress information systems in daily activities, such as placing orders, managing inventory, and interacting with customers. | Shows how the AliExpress information system is used by users in various locations. | Represent AliExpress information system users and their needs in accessing and using the system. | Determine the schedule of system usage and daily activities performed by AliExpress users. | Improve operational efficiency, productivity, and user satisfaction through the use of effective and user-friendly AliExpress information systems. |

### 3.2. Benefits of Zachman Framework Implementation at AliExpress

By utilizing the Zachman Framework and considering the various perspectives involved, AliExpress can optimize business management, design an efficient enterprise architecture, integrate technology well, and meet the needs and expectations of their users. The application of the Zachman Framework helps AliExpress face complex challenges in the global retail industry with a structured, holistic, and user-focused approach. AliExpress, as one of the largest retail commerce platforms in the world, faces complex challenges in running its operations. In order to optimize the efficiency and effectiveness of its business, AliExpress has implemented the Zachman Framework as a framework for developing a holistic and structured enterprise architecture (Fadlil et al., 2021).

The application of the Zachman Framework to AliExpress helps in systematically identifying and mapping the data used in its operations. As an online trading platform, AliExpress has thousands of sellers and millions of products on offer. By using the Zachman Framework, AliExpress can classify and organize product data, customer information, transactions, and reviews more efficiently. This provides a strong foundation for effective data management and improves the quality of product searches and recommendations provided to customers. The Zachman Framework helps AliExpress map the business processes involved in its operations. Delivery and order handling are important aspects of AliExpress'
business. By using the Zachman Framework, AliExpress can map these processes systematically. This enables identification of improvement points in the supply chain, optimizes operational efficiency, and provides a better customer experience. In addition, business process mapping also helps in the identification of potential risks and improvement of system security and reliability (Espadas et al., 2008).

AliExpress can also utilize the Zachman Framework to map the geographic location of its operations. As a global retail platform, AliExpress has distribution centers and warehouses spread across multiple countries. Using the Zachman Framework, AliExpress can map these locations clearly. This information provides a better understanding of the logistics infrastructure and allows AliExpress to optimize delivery routes, streamline product storage and distribution, and ensure proper stock availability at each location (Saoud and Bellabdaoui, 2023). The Zachman Framework helps AliExpress map the organizational structure involved in its operations. AliExpress involves various parties, including managers, sellers, and customers. By using the Zachman

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Framework, AliExpress can map the relationships between these parties and identify their respective responsibilities. This allows AliExpress to improve collaboration between sellers and customers, increase trust, and facilitate more effective communication.

The Zachman Framework also helps AliExpress map out its operational schedule. In the retail business, time is a critical factor. Using the Zachman Framework, AliExpress can better understand delivery schedules, order handling, and customer service. By effectively mapping operational schedules, AliExpress can improve responsiveness to customer demand, minimize waiting time, and increase customer satisfaction. The application of the Zachman Framework to AliExpress helps in understanding the reasons why this company needs an effective enterprise architecture. AliExpress aims to improve operational efficiency, better meet customer needs, achieve competitive advantage, and ensure sustainable business growth. The Zachman Framework helps AliExpress formulate the right architecture strategy to achieve these goals (Ertaul et al., 2011).

### 3.3. Things that Affect the Application of the Zachman Framework on AliExpress

#### 3.3.1. Data Classification and Management

AliExpress has millions of products offered by thousands of sellers. In implementing the Zachman Framework, it is important to classify and manage data properly. This involves identifying the types of data involved, such as product information, categories, prices, customer reviews, and transaction data. By applying clear classification, AliExpress can improve data management, increase product search accuracy, and provide more relevant recommendations to customers. In addition, with effective data management, AliExpress can improve the security and privacy of customer data, ensure regulatory compliance, and reduce data-related risks (Pereira and Sousa, 2004).

#### 3.3.2. Business Process Automation

Business processes are at the core of AliExpress operations. By applying the Zachman Framework, AliExpress was able to map and deeply understand the processes involved, such as shipping, order handling, and customer service. The detailed mapping enables the identification of areas of improvement that can increase efficiency and productivity. For example, AliExpress can use historical data to improve delivery schedules, optimize inventory management, and enhance coordination between sellers and logistics partners. By optimizing business processes, AliExpress can reduce lead times, minimize operational errors, and improve customer satisfaction (Puspita et al., 2019).

#### 3.3.3. Operational Site Management

AliExpress is a global retail commerce platform with operations involving multiple geographical locations. In this context, the Zachman Framework helps AliExpress map its operational locations, such as distribution centers, warehouses, and branch offices. By well mapping these locations, AliExpress can optimize the supply chain, reduce shipping times, and overcome logistics challenges. For example, AliExpress can choose a strategic location to speed up shipments to a specific region, distribute stock efficiently to avoid inventory shortages, and set up a distribution center well to minimize logistics costs (Indrawan, 2019).

#### 3.3.4. Collaboration between Involved Parties

AliExpress involves various parties in its operations, including managers, sellers, and customers. In applying the Zachman Framework, it is important to clearly map the organizational structure and relationships between these parties. AliExpress can use this framework to improve collaboration between sellers and customers. For example, AliExpress can facilitate more effective communication between sellers and customers, encouraging feedback (Sardjono et al., 2020).

## 4. CONCLUSIONS

Overall, AliExpress' application of the Zachman Framework provides a strong foundation in developing a structured and holistic enterprise architecture. By properly mapping the aspects involved in its operations, AliExpress can improve efficiency, optimize customer experience, and gain a competitive advantage in a competitive global market. AliExpress can utilize the Zachman Framework to map the geographical locations of its operations. As a global retail platform, AliExpress has distribution centers and warehouses spread across multiple countries.

Using the Zachman Framework, AliExpress can map these locations clearly. This information provides a better understanding of the logistics infrastructure and enables AliExpress to optimize delivery routes, streamline product storage and distribution, and ensure proper stock availability at each location. Improved operational efficiency of AliExpress online retail platform that operates on a global scale. With the Zachman Framework, AliExpress can analyze and understand their operational processes from various perspectives, such as business, technology, and data perspectives.

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