Design Enterprise Architecture using E2AF for retail company

Lily Puspa Dewi
Informatics Dept. Petra Christian University
Siwalankerto 121-131
Surabaya, Indonesia
62-31-8439040
lily@petra.ac.id

Uce Indahyanti
Graduate Student
+628123155056
u.indahyanti@gmail.com

Yulius Hari
Graduate Student
+886 - 975969548
yulius.hari.s@gmail.com

ABSTRACT

Utilization of information technology (IT) provides many advantages in all aspects of the business, which include providing on accurate, rapid and integrated to support all business functions. Use of IT in retail is needed primarily to support the supply chain network (supply chain network) and improve on customer service. This paper tries to discuss the design of Enterprise Architecture (EA) on the retail company business, and as a reference in the design, we use the Extended Enterprise Architecture Framework (E2AF).

The results are EA2F can give the retail company a big picture about "the organization-wide roadmap" for achieving the vision and mission of the organization, through optimal performance of core business processes within an efficient information technology (IT). The design of EA used to map the entire roadmap E2AF Company including its style, is a strategic step that is necessary to achieve the vision and mission. The design of this EA is still a map of "As Is" condition that needs to be addressed further in order to be perfectly deliverable.

Keywords

Enterprise Architecture, E2AF, retail company, Supply Chain

1. INTRODUCTION

In line with the development of information technology in Indonesia, almost all of our activities can not be separated from the touch of technology, ranging from information service provider to our work facilitator and not least in the retail company. Retail Company has never missed with the use of technology as a information media, technology now has an important role in the retail company, such as an information system that is able to accommodate the supply chain between the supplier or warehouse stores. Similarly, as a media service that is able to provide service and communication between the company and customer.

PT ABC is a one company in the Retail franchising which growing rapidly in Indonesia today. At the end of 2009, it already has 3293 outlets spread across the island of Java and Bali. In the same year, it becomes a public company in Indonesia Stock Exchange.

PT ABC also runs several systems that have been integrated such as a communication media with its customers, as well as with the franchise business owners, as well as stakeholders and suppliers. Besides that, the focus also to the stock availability that is always kept the quantity. PT ABC does not want to disappoint customers because lack of stocks where in addition to the lost sales are also able to create a bad impression or make disloyal customer.

2. UNIQUE CHARACTERISTIC OF RETAIL COMPANY

The uniqueness of the retail company system, among others, is:

1. No manufacturing processes

   Retail Company does not do manufacturing process. The retail company has a high dependence on suppliers, because it is only authorized as a wholesale of existing products and it follows the policy of selling products from the Supplier.

2. Good distribution network

   Retail distribution channels consist of some combination of producers or manufacturers, agents or brokers, wholesalers or distributors, importers, and retailers. Each step along the channel has a specific purpose that is met by one or more member companies. Distribution channels are important because they allow for a continuous flow of product despite the natural peaks and slumps experienced in manufacturing and sales. They also provide efficiency, economies of scale, and cost savings to members of the channel.

3. Price stability

   One interesting point is the uniqueness of every retail business has a uniform price for both at the central and branch. And generally every retail company to compete and compete in the price.

4. Centralized warehouse and supplier

   One of the things that support the retail company has a centralized distribution system supplier which already has its own warehouse to distribute the goods to the branches. Hence, in the order to the supplier can be done in a very large quantity so as to depress prices.

5. Approach to customer behavior

   In retail enterprise is not just a personal approach, but also pay attention to consumer behavior, in addition to

seeing sales data which are often purchased, various promotions are also conducted based on his behavior. The examples are frequently purchased items will be placed on the middle shelf is easily accessible by consumers. Retail business is also competing to hold a promo or event based on a national holiday.

3. BUSINESS PROCESS AND DISTRIBUTION

In order to guarantee the availability of various products to thousands of customers' everyday, as well as creating efficiencies for itself and its suppliers, PT ABC reorganize their supply chain system. It is important to maintain the availability of stock, especially because the product being sold is grocery.

Business processes for supply chain in this retail company uses the Just In Time (JIT) in the Distribution Center (DC) called Cross Dock. The purpose of this business process is to reduce the goods lead time before distribute to the outlets. So, when the supplier sends the goods to DC today, then the next day that the goods have been sent to the outlets. In short, the method of Cross Dock allows the process more transparent in the distribution of the products because there is no degradation product (left) in the warehouse. Basically, the function of DC is to redistribute the product, not to store the product.

The uniqueness of the way – comparing than the supplier sends directly - that the products had been consolidated when delivered to stores. For example, normally, grocery outlet receives 30 different supplier's trucks, because, the supplier may submit to the DC. Furthermore, the goods from various suppliers will be sorted out according to demand outlets. For example, now a truck that came to the outlet just need to bring products that are specifically required by that outlet

The developed supply chain is not only based on the physical movement of products, but also to the flow of information. The success in the retail supply chain is largely determined by the flow of information from the outlet to the supplier, and vice versa, data synchronization with both parties.

For order process flow, Retail Company developed model as Central Orders Pool (COP) in which the ordering process is done automatically and centrally based on the position of stock in outlet and other parameters. To make purchase orders to all suppliers, Retail Company uses an Electronic Data Interchange (EDI) to collect products list that will be ordered from every outlet. The product list will be announced over the web, so supplier can check what products they should send.

Because the purchase order process is centralized, the accuracy stock amount in every outlet is important. To maintain this accuracy, the retail company adjusts with cycle count process that counts the stock every day. Hopefully, data accuracy in distribution center is valid although they handle a thousand products.

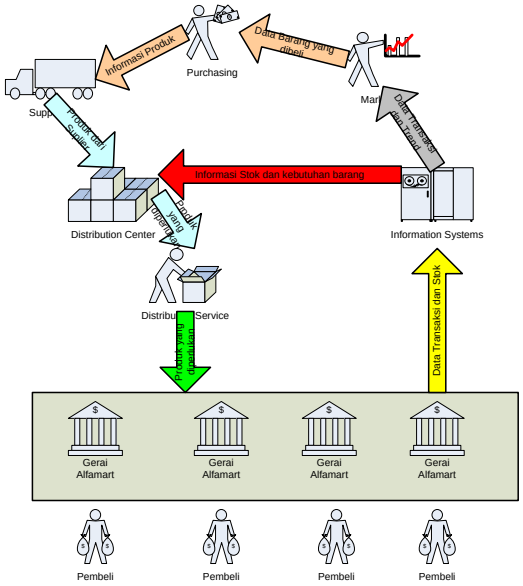


Figure 1. Business Process and Distribution

Every outlet which incorporated with this retail company integrate in to same information system as shown in Figure 1.

The system will automatically take advantage of the concept of Just In Time (JIT) so that the groceries that be required having minimal stock. When the products have reached the minimum stock then the system will automatically order that product to Distribution Center (DC) to be forwarded to the distribution division to deliver the product to the corresponding outlets. Sales transaction data can also be used by marketing division to determine strategy or next purchase order. The purchase order will be handled by purchasing division to be submitted to supplier.

4. EXTENDED ENTERPRISE ARCHITECTURE FRAMEWORK (E2AF)

Institute For Enterprise Architecture Developments (IFEAD) has developed architectural design methods, which prescribe a coherent design and realization of new business and the supporting IT systems. This guarantees the full integration between the business and human perspective of an organization and the technology functionality of supporting IT systems (Institute For Architecture Enterprise Developments)

IFEAD describes architecture as a set of principles, rules, standards and guidelines reflecting the organizational culture and behavior that prescribe architects, program/program managers and developers how to deal with the transformation of both the business and IT systems.

4.1 Definition

IFEAD uses the following definition for enterprise architecture: Enterprise Architecture is about understanding all of the different elements that go to make up the Enterprise and how those

elements interrelate. Enterprise Architecture embodies a set of principles, rules, standards and guidelines, expressing and visualizing the vision, culture and behavior of an organization while implementing certain concepts that serves as prescription for the design and construction of a certain object type. It contains a combination of style, engineering and construction principles, guaranteeing the uniformity and quality of the resulting object.

IFEAD has developed such an architectural approach for the design and realization of both the business & Information areas of an organization as well as for the supporting IT systems. This approach is applicable for different organizations, in different situations and at different contemplation levels.

The architecture style reflects the philosophy and mindset behind the framework and approaches and delivers a certain commonality in execution with respect to organizations unique situation.

4.2 The role of Architecture

In the development of a house, building or any object we can always identify the following main steps (Figure 2):

- A discovery process to identify the needs and requirements in the context of a certain situation;
- A design process which leads to a design of the object in the form of drawings and/or models;
- A transformation process to plan the realization of the object in its environment;
- A construction process that regards the realisation of the actual object based on the design and realization plan.

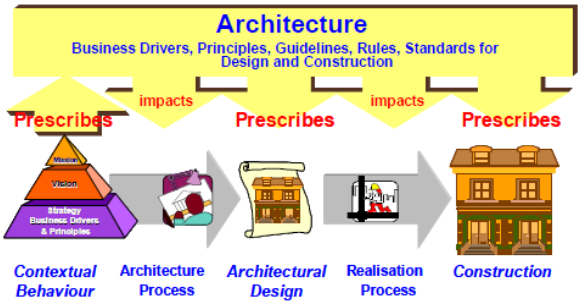


Figure 2. Development Steps

The principles, guidelines and rules identified in the discovery phase are used in both the design, transformation and construction process. As such, the architecture impacts all processes. The architecture constraints the freedom of the designer and constructor of the object and guides them towards a structure that complies with the business vision and concepts of the architecture. The architecture serves as a prescription for the design, transformation and construction of the object. As a result the object will be recognised as being 'designed and constructed under architecture'.

The three main elements in E2AF are:

- Construction
- Function
- Style that show company's culture, value, and rules.

The term enterprise architecture associated with the construction and function, while the style is forgotten or ignored. With three main elements of the above, demonstrate an understanding of enterprise architecture differences among these elements and how these elements interrelate to support the organization.

E2AF's excellence can make sure the enterprise designer take full advantages of the alignment between business and IT by integrating all areas of architecture into a single whole result. Architecture design consists of business, information, information systems, security, infrastructure, and governance aspects. The design will become like a map for the management to organize all relevant matters.

E2AF based on the ideas described in IEEE 1471-2000 about viewpoint and the transformation from concepts into the enterprise architecture. Some companies' stakeholders influence on the goals, objectives and characteristics. In addition, the stakeholder also has a different concern and even a different viewpoint. The model of stakeholder is divided into four types, such as Business, Information, System and Technology Infrastructure as shown in the below.

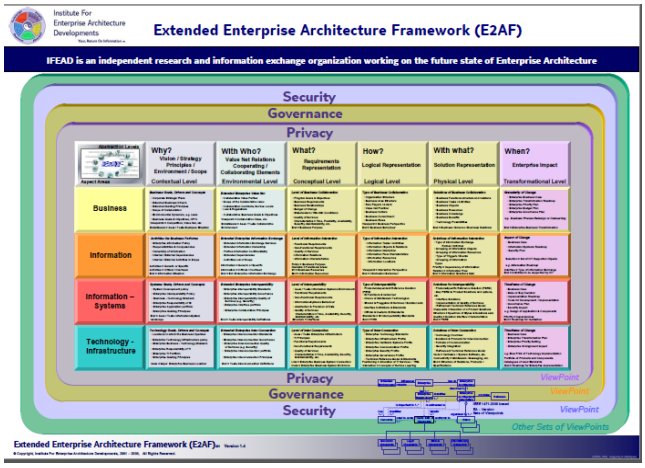


Figure 3. Extended Enterprise Architecture Framework (Institute For Enterprise Architecture Developments)

The topics are divided into:

- Contextual Level (Why) describe the context and scope of the company that is more profound. "Why" describe the motivation of the company, a statement about the vision, mission, scope and business strategy and technology firm.
- Environmental level (With Who) describe the business relationship and how the flow of information. "WHO" describes the relationship with business and technology in the extended (enterprise)
- Conceptual level (What) illustrate the need. "What" describes the purpose and objectivity as well as the needs of all corporate entities involved in all aspects.
- Logical level (How) describes the ideal solutions
- Physical level (With what) describe the products and technical solutions physically. "With what" describe

physical solutions in every area, including changes in business and communications, software and tools, hardware and communication products.

- Transformation level (When) describes the impact of a solution to the company. When describing the transformation roadmap, on the whole area.

5. ENTERPRISE ARCHITECTURE DESIGN

Enterprise Architect (EA) provides a map of the entire organization (the organization wide roadmap) to achieving the vision and mission of the organization, through optimal performance of core business processes within an efficient information technology (IT). Our thanks to ACM SIGCHI for allowing us to modify templates they had developed.
EA is also integrated in the Information Architecture which is a comprehensive model of the data, business processes and IT assets within the company. The Information Architecture presents a long-term view of the various processes, systems and technologies based on a consistent and coherent design.

In designing the EA really need attention to the details of any existing business processes within the company, in order to achieve harmony between the structures of the company's IT with business goals.

Company's business processes have been discussed above, and, we summarized in the following few points:

- All outlets integrated into an information system which capable of displaying transaction data and the condition of stocks of goods.
- Supply chain business processes using the Just In Time (JIT) in the distribution center or Distribution Center (DC) called Cross Dock.
- The Cross Dock does not make a degradation of products (left) in the warehouse, because the function of DC is to redistribute the product, instead of storing the product
- The system will automatically do a purchase order to the Distribution Center (DC), if one product has reached the minimum stock
- Ordering to all suppliers uses an Electronic Data Interchange (EDI), a supplier can receive it via Web. Some supplier has been integrated with their ERP system.
- Retail company implement cycle count process (stock checking using daily sampling). That way, the accuracy of the data in the DC claimed almost always 100%, while managing 10.000 of products
- DC will distribute certain goods to outlets accordance with the order.
- Sales transaction data will be used by marketing parties to determine strategy and forecasting purchase order, so the stock amount in DC is always fulfilled.

6. E2AF MAPPING

The design that has "the organization-wide roadmap" we lay out below. The E2AF is used to map the retail company's enterprise architecture.
As shown in Figure 4, the business roadmap was mapped into six levels.

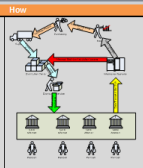
	Why	With Who	What	How	With what	When
Business	**Vision** "To be Indonesia's largest and globally competitive widely owned retail distribution network that empowers small entrepreneurs and fulfills customer needs and expectations" **Mission** • To satisfy customer needs and expectations by focusing on high quality products and services. • To implement ethical business practices, to be the best in all of our actions. • To develop entrepreneurial spirits and skills in the Company and the society. • To develop a reliable, healthy and growing organization which benefits all stakeholders. **Values** We set high standards for integrity, innovation, quality and productivity, teamwork and customer satisfaction.	Build the relationship with: • supplier, establish links to the certainty of the availability and quality of goods. Cooperative relationships stated in the contract. • Franchise holder, holds the franchise license for certain outlets. Rights and obligations of both parties stated in the contract and authorized by law. • Consumen is important role as party was served.	Meet the customer daily groceries		Using the DC system in each area that cater the outlets within a certain range	Transformation of the company's vision and mission to all existing business processes outlined in the business plan, which at thebreakdown in the strategy-objective targets and activity plans in every business activity.

Figure 4. Business' Organization Roadmap

In Figure 5, the Information of Retail Company was mapped. This will be given a clear view of information flow.

Information	Information flow support the operational	• With supplier, products' availability and delivery. • With Franchise holder, monitor and evaluate the finance. • With customer, interesting promotion.	Outlet's information stock	List of supplies of goods which reach a minimum stock and restock outlets	Send the stock information and purchaseorder centrally	Sesuai dengan Activity Plan dan Road Map IT

Figure 5. Information's Organization Roadmap

In Figure 6 shown retail company information system in every level.

Information system	Support the operational of retail company so stock information can be controlled.	• DC and outlets must be connected continuously to support the flow of information. • Accurate information to the supplier . • Customer promotion	Information system support JIT	Purchase order system automatically, from outlet to DC, from DC to supplier	Integrated Information System	Sesuai dengan Activity Plan dan Road Map IT

Figure 6. Information System's Organization Roadmap

In Figure 7 shown technology infrastructure support the company.

Technology-infrastucture	In 2009, the retail company has 17 DC located in Java, Sumatera, Bali, and Sulawesi. For some new DC use modern management of goods, such as using conveyor, computer system,forklift.	website	Providing integrated information system as internal, stakeholder, and supplier communication media.	Developed a model: Central Orders Pool (COP), in which the ordering process is done automatically and centrally based on the position of stock in stores and other parameters. To make orders to all suppliers, retail company using an Electronic Data Interchange (EDI).	ERP, B2B via company website	Sesuai dengan Activity Plan dan Road Map IT

Figure 7. Technology Infrastructure's Organization Roadmap

7. CONCLUSION

- The design of EA set "the organization-wide roadmap" for achieving the vision and mission of the organization, through optimal performance of core business processes within an efficient information technology (IT)
- The retail company has some unique characteristics, the company focuses its business processes in to the flow of products (goods) from supplier to customer

- The design of EA used to map the entire roadmap E2AF Company including its style, is a strategic step that is necessary to achieve the vision and mission.
- The design of this EA is still a map of "As Is" condition that needs to be addressed further in order to be perfectly deliverable.

8. REFERENCES

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