



Design Information System Order Fulfillment Using Archimate Modelling

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ABSTRACT

Diesel is a necessity for industries such as oil, gas, electronics, textiles, automotive, shopping canter, and the construction of tall buildings such as data canter to switch to diesel generators to handle power outages. Along with the development of the industry, the diesel company that we made the object of research has developed to work together in the Asia Pacific to become a group. This study will map a planning strategically fulfilment business process to support the needs of changes in governance that exist in the company through the Enterprise Architecture Planning. The method used to plan the entire system will use archimate modelling which will result in modelling into a business that is running into a proposed business.

Key words : Enterprise Architecture Planning, Archimate Modelling, Order Fulfillment development.

1. INTRODUCTION

Threats caused by climate change and global warnings can cause crisis problems in electricity supply, thereby reducing energy use, removing carbon from fuel [1]. Therefore, reducing friction losses for these main sources is one of the significant goals of a low friction machine in the future [2]. Basically, new possibilities to be opened with electronic units included in the control system [3]. Diesel demand will continue to increase because industries such as oil, gas, electronics, textiles, automotive, shopping center, and the construction of high-rise buildings such as data centre are turning to diesel generators to handle unexpected power outages [4]. There are many ways to make policies, including restrictions that cover the scope of information systems and information technology, focus on processes such as collection policies for digital initiatives and storage and regulations, policies that shape and influence various actions and organizational structures [5].

Most organizations in all industrial sectors, offices, and governments are now globally dependent on their information systems (IS) and information technology (IT). With the rapid development of the technology, the use of technology has

made it a way to use business activities [6]. Strategy execution is part of a business strategy when it impacts on IT infrastructure (business strategy to IT infrastructure with its alignment) but is limited by business infrastructure (business alignment) [7]. The IT department needs to change several company systems and business processes to support many processes in system integration. In particular, IT departments can choose to integrate several applications located in different positions and updates related to business processes that have been disconnected beforehand, so that they can make a plan [8].

The planning for projects requires understanding the company's business processes, analyzing business requirements, system design, the evolution of systems, and continuous improvement of all of the above [9]. Dynamic business is becoming increasingly complex with functional units that require more and more inter-data flow to departments to support decision making, timely and efficient procurement of spare parts, inventory management, accounting, human resources, and distribution of goods. In this case, efficient information systems will increase competitiveness through better cost reduction and logistics [10]. In modeling an identification of system quality, information quality, satisfaction, individual impact and organizational impact or dimensions to measure the success of a company's system [11]. It enhances effective functionality in sales, distribution and service processes, so as to maintain good business and professional relationships between the organizations targeted by them in architectural design [12].

Architecture is a platform that can be used to determine the strategic context for enterprise architecture, Enterprise itself and ideas from the implementation that embodies design and which ultimately provide a value chain for business [13], [14]. This can allow you to manage your entire IT investment in a way that meets your business process needs [15]. Enterprise Architecture for the development and implementation of software and technology implementation can support strategically, which is specifically directly related to enterprise architecture for direct development, making decisions to realize the target of enterprise architecture planning [16]. For example, architecture can offer training and training for development projects in modeling project architectures and adjusting project architecture with existing architectural documents that are relevant in the process [17]. A comprehensive and packaged software solution that seeks

to integrate a complete series of processes and business functions to present the overall business outlook with information and IT architecture, and the software will operate without failure for a certain period of time [18], [19].

In enterprise architecture, there is archival language support for all TOGAF phases, integrated phases with each other, implementation & migration, business layers, application layers, technology layers. The purpose of this development cycle architecture is to optimize the process of inheritance of companies that are often computerized (both manual and automatic) into integration that is responsive to change and supports the delivery of business strategies [20]. Structuring the organizational structure for business and IT infrastructure reflects the requirements for integration and standardization of company models. Using TOGAF can produce an enterprise architecture that is aligned with the business so that it reflects the needs of stakeholders and gives consideration both as a business need and that will be felt in the future [19].

In a diesel company, this will change the process business which as the center of the company's main branch will join into the scope of Southeast Asia and definitely that will change the ongoing business process, so it will require strategic design for its business processes. How to plan the company's architecture to realize the sustainable business goals of the information system in the diesel company and the impact of the design for the business process?

2. THEORETICAL BACKGROUND

This section briefly summarizes some of the concepts underlying Enterprise architecture, TOGAF Architecture Development Method (ADM), This section also provides a recent overview of the proposed variations in order fulfillment optimizers.

2.1 Enterprise Architecture

Enterprise Architecture (EA) is a number of standard documents that provide an overview of the business processes of a company from the business view to an integrated information system (IS), aiming to bridge the gap that exists between business people and stakeholders of the information system and to improve harmony between business and IS. EA can be considered a "city plan" to help companies develop smoothly, manage change, simplify their IT landscape, find optimal solutions to reduce business problems, and even encourage radical business transformation [22]. Enterprise Architecture provides a mechanism that allows as a means of communication about the important elements and functions of a company. Appropriate and high-quality information is also provided. EA makes it easy for organizations to respond to the power of change and make better decision tools. And in the end, because EA is in information, they can generally improve future IT implementation of general architectural information and build repositories to store it [23].

Strategy execution is when a business process strategy can impact on the IT infrastructure (IT business-to-infrastructure

strategy to cross-domain alignment) but is limited by business infrastructure (business alignment) [7]. EA represents a structure to model business process entities and IT company. There are various models for various perspectives in EA, each with different coverage and activities [9]. While strategic alignment between business and IT in companies can add more value to business processes, technological complexity will emerge and, in the meantime, companies must also achieve integration to ensure survival among their competitors.

Achieving these goals is difficult. EA is believed to provide the right concepts, methods, models and tools to facilitate alignment and integration of business IT [24]. EA is a high-level overview of the company, which is used to manage integration between business and IT. Furthermore, in recent years EA has been used to increase organizational flexibility and to explain the contribution of IT to business purposes. So, EA needs to expand the implementation of IT projects and identify the effects of changes in the business environment on business objectives and EA, to identify values from certain architectural aspects and to evaluate which of the projects carried out has the most business value [25].

2.2 TOGAF Architecture Development Method

The Open Group Architecture Framework (TOGAF) is a high-profile EA, providing a method as well as a tool to support architectural development. It consists of seven modules which can be used individually in one another. The core of the TOGAF is the Architectural Development Method (ADM) and the Architectural Content Framework [26]. ADM is a cycle process divided into nine phases. After the initial phase where all will be interconnected, relevant guidelines, standards and process architecture objectives are identified, the main process begins with an initialization of architectural vision and principles that must guide Architecture [27].

This provides a basis for developing business architecture, architectural information systems, and technology architecture. TOGAF is a framework for developing EA, which is developed and managed by The Open Group and includes detailed support methods and tools [28]. Although the architecture methodology determines the steps for developing and designing the application architecture, it fails to describe the development and use of this shipment. In addition, there are shortcomings of effective methods, tools and typical cases to ensure operability, practicality and architectural feasibility in current research [29]. Throughout the ADM cycle, it is necessary to validate the results against initial expectations, both for the entire ADM cycle and for certain phases of the process.

2.3 Order Fulfillment

Order fulfillment is a process in managing a supply chain management. Order Fulfillment in the general sense can be called a complete process from the point of sale to the delivery of product orders to customers. Sometimes Order Fulfillment is usually used to describe a logistics distribution action, however, in a broader sense it refers to the way the company

responds to customer orders [30]. To complete the logistics report, a management must design a network and fulfillment process that enables customer demand while minimizing total shipping costs. This requires logistics, financial, marketing, purchasing, development and production. Integration within the company and coordination with key suppliers and customers. While at the strategic level, management can make an important decision.

3. RESEARCH METHODOLOGY

The diesel companies in this case study will move groups that were different from each country to interoperate now becoming Asia. From this methodology will be a guideline to assist all changes in business processes in this diesel company. Archimate modeling design starts from a series of concepts that are relatively well known together. They have been specialized towards application at different architectural layers, as explained in the following sections. The most important design restriction on the language is that it has been explicitly designed to be as small as possible, but still usable for most Enterprise Architecture modelling tasks [14].

Archimate is needed to show how the elements in the architecture of an organization can contribute to the strategy, or can contribute to implementing the strategy. Also, by knowing how to model strategies we can determine how the strategy impacts the company's architecture. This can be used to carry out an impact analysis and determine which actions are most aligned with strategic intentions (time, scale, money). Of lately some people claim that IT applied to the corporate and institutional environment has become a commodity of strategic assets. This structural description will at least consider a system component, the interface offered with these components to external parties, and the relationship between these components. The following method used in this research shown in Figure 1. Archimate Modelling.

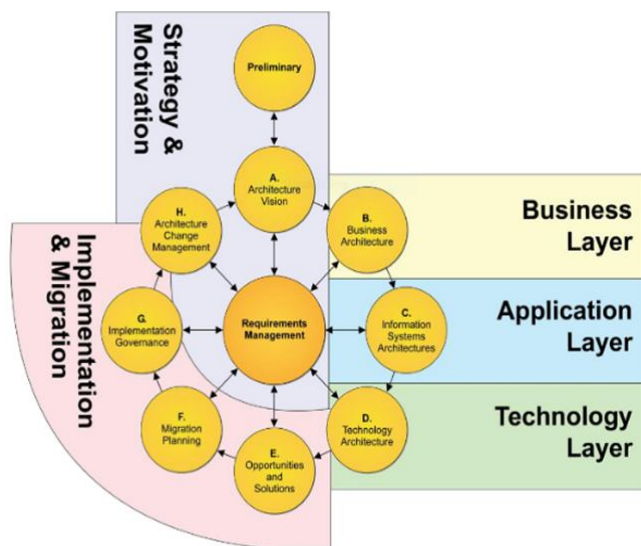


Figure 1: Archimate Modelling [26].

The ArchiMate modeling defines the structure of standard elements that have been agreed upon and are closely related, which are specialized in different layers. The three layers are defined in the ArchiMate model language as follows:

- The first layer of business is to describe business services provided by customers, which are realized in the company through business processes carried out by business people themselves.
- The second layer of the Application describes application services that support what is done by businesses and applications what can be implemented?
- The third layer of technology is to provide an overview of information technology services such as processing, storage, and communication services needed to run applications in the company, and hardware such as devices and computers as well as communication and system software that can deliver these services. The addition of physical elements is given to physical equipment models, materials, and distribution networks to this layer.

In this research will discuss the layer business and will design in such a way as to optimize all changes in business processes. This method is expected to be able to effectively improve data, support better decision making, and take a business-driven approach to Enterprise Architecture, can conventionally increase the attractiveness of the EA function [26]. Therefore, this methodology has been divided into three phases and will only take the business layer in Figure 1. Archimate Modelling.

4. ANALYSIS AND IMPLEMENTATION

Doing business for business owners, especially in diesel companies, needs to consistently maintain a focus on the ability to determine strategic decisions. Most owners in running a business carefully monitor various factors in their facilities such as internal processes, existing sales, and even the level of staff performance to ensure that all procedures run with business processes. Overall companies and productivity, they are not the only items that need to get strategic attention from manufacturing or distribution organizations. When wanting to build industry credibility as a fully functional distribution center that is committed to meeting customer satisfaction and demand, implementing various forms of automatic automated Order Fulfilment is an absolute necessity. Based on the development of the Order Fulfilment Information System, an information source is needed to direct the development process better. The business process of diesel companies that are still unable to implement strategic information system development can be seen in Figure 2. The Meta-Model of the Diesel Company Current Business Model.

The layers of the main business elements in diesel companies will be illustrated by Business Actors, Business Roles and Business Objects. Patients and service providers are examples of business people. Servers and networks are examples of business ways.

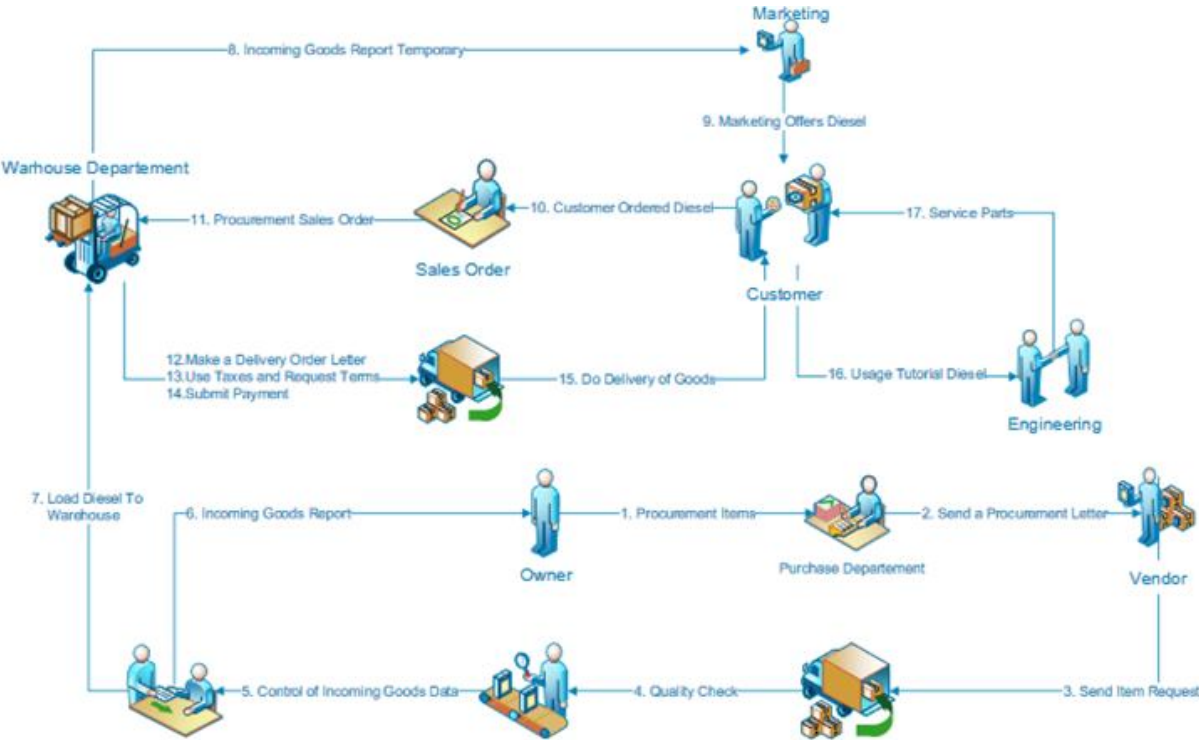


Figure 2: The Meta-Model of the Diesel Company Current Business Model

Figure 2. The Meta Model of the Current Business Model of Diesel Companies. Key elements are replaced by business goals to be understood in today's business models. Business facility perspective is a technological element to represent the use of devices and systems. This is an important element for innovating the latest business models, although this does not include traditional business process model notations such as BPMN. BPMN does not include business objectives, although BPMN can represent business people, service processes, and objects. To represent business processes that currently require planning that can integrate into the system proposed to be realized in the company. From the above business processes can be concluded in the business planning flow through the Archimate that will be represented, we identify the current portfolio based on the system, the business portfolio proposed to be applied in the diesel company shows Figure 3. The Business Layer in the Strategic Planning Model.

4.1 Business Actor

The Diesel companies in Figure 2 still not yet achieve optimal strategic planning; therefore Archimate will represent a new model of business processes that will be proposed. Describing all the actors in the business process to get a new planning strategy, to adjust achieve in their positions.

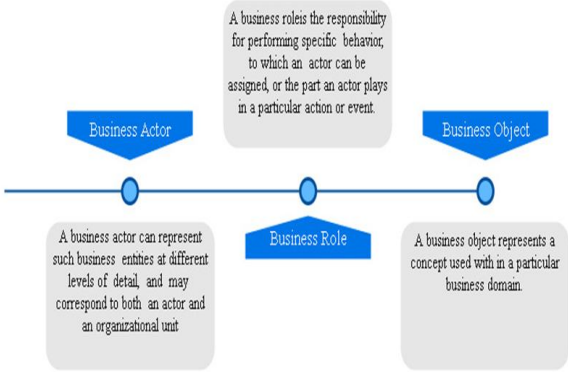


Figure 3: The Business Layer in the Strategic Planning Model.

To explain business goals and help identify the actions needed. Goals are general requirements about desired targets, while goals are specific steps or actions taken to achieve business goals. The greater use of 'outsourcing' for the significant aspects of technology supply reflects the increasing sophistication and maturity of the information technology industry and presents a challenge to optimize the choice of internal and external resources to meet various business technology needs. From the current business process there is an introduction to actors that can be displayed in Table 1.

Table 1: Goals Business Actor

Actor	Goals
Owner, Description: Lead the company and make decisions	Companies need leaders who are competent and have knowledge of managing all the employees below them.
Warehouse Department, Description: Arrange data for new items to the warehouse	A warehouse department must ensure that the database is the same as physical data and ensures that the goods have quality
Marketing, Description: Market diesel products to large and medium industries	Sell goods with target items exceeding competitors
Sales Order Department, Description: Manage data on sales and procurement of goods	Ensure sales data is the same as physical data
Engineering, Description: Provide services to customers and provide diesel usage instructions	Provide all the best services and maximum improvements
Purchase Department, Description: Make procurement of goods and procurement letters to vendors	Ensure the purchase report can be in accordance with the procurement of goods

This business actor in a diesel company requires integration between the main offices, because to implement a new business process must identify a new planning finding and require additional employees to meet strategic planning, to describe it we must identify the impact of implementing the actors in this diesel company will be in the business role. From the goals of the actors can integrate into order fulfillment because each division has been able to meet the requirements of planning such as the marketing, sales order and purchasing division, all of the divisions already have a relationship between manufacturing processes only need to identify the business role. From the goal, it was explained the business goals of this actor to analyses the description of each actor who has a dominating role in many reports that would certainly not be optimal if the implementation of the order fulfillment process still took part in one division working on two reports at the same time, of course it will not be possible to realize strategic planning for this research.

4.2 Business Role

The business role will be company will form a strategy from a strategic point of view to affect the application of the business layer. The strategy viewpoints enables companies when implementing business architects to model the views of high-level strategic reviews as the beginning of the company's strategy (actions), capabilities and resources and the team that runs the wheels of the company, and are able to produce something that can be expected

Table 2: Role of Activity in Order Fulfilment

Role Activities; Strategy Viewpoint	Impact on Order Fulfilment
Make product decisions by Owner; Course of Action and Capability	Get a report as soon as possible and make a sales decision
Load diesel on stockroom by Warehouse Department; Resource	Updated and documented incoming and outgoing information
Offers product by Marketing; Course of Action	Can update marketing campaign product data
Finance and sales data by Sales Order Department; Capability	Get data on product availability and exact prices from vendors
Usage tutorial and services by Engineering; Resource and Capability	Service and maintenance support marketing
Procurement items by Purchase Department; Course of Action	The appropriate supplier data updated
Order product by Customer; Outcome	Satisfaction with goods and services

Each role business will determine how much impact the order fulfillment implementation will have to support the employees so that there is no trouble in using the proposed business process. Every role in this planning must be able to begin to adapt into business processes to trim on the time spent on reporting that is not computerized, strategy viewpoint will discuss a brief action with an option that has an impact on strategic planning. At this stage it will represent the roles of each division in the diesel company to determine the capabilities and resources of the company in terms of strategic planning and will be shown in Table 2. Role of Activity In Order Fulfillment.

Describe the type of role with the view point to choose the decision on how the impact of implementing order fulfillment to the business process that is being proposed can also implement strategic planning, but there is something that can still purpose an order fulfillment process that is one process that takes part two activity. The data received from the

company, the capability of this product requires many engineering service providers who can service and interact after marketing offers the product, which later engineering will rely on their machine expertise to interpret the direction of using diesel engines properly as well as obtaining service satisfaction. This strategic planning must divide several divisions to integrate with each other division to trim on work time. In viewpoint strategy there is a course of action option, resource, capability and outcome. The purpose of the discussion is that the relationship applied to the company has something to do with the vision and mission in the diesel

company to determine which activities take more roles, to then the role will be trimmed and will be proposed again in previously section from the impact analyses into the table it is not undeniable to increase the number of employees for the integration stage to the proposed business process, at this step a new business process modelling must be created and can process all orders without the need to monitor reports to each division.

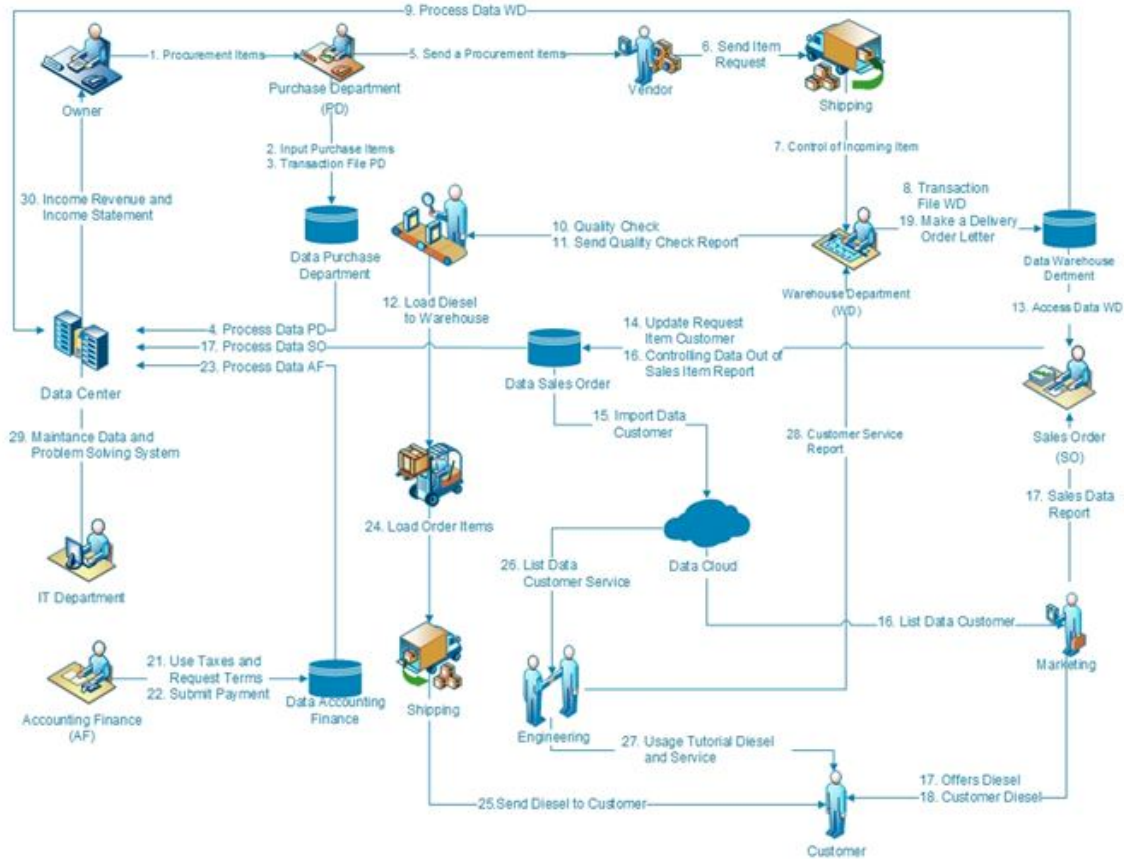


Figure 4: The Meta-Model of the Diesel Company Proposed Business Model

3 Business Object

Business objects can be realized by representations or data objects (or both). The name of a business object should be a noun. Various types of business objects can be defined. Business objects are passive in the sense that they do not carry out an optimal process.

Business objects can be used to represent information assets that are relevant from a business point of view and can be realized by data objects. In archimate models a process that makes the process interconnect each other to realize new objects that have been analyzed before in previously section, to make this new object analyzed before and can conclude a process finding in a diesel company that no longer has a division that takes many roles in completing the report, of course the object that will be produced will require adjustments in the application of activities that work in this

order fulfilment. This inclination of planning will increase the fulfillment of outsourcing orders which continue to drive the fulfillment industry to offer more competitive, turn-key solutions. At this step, development will be carried out based on the Archimate related to changes that have occurred in the business process determined by the process as shown in Figure. 4 The Meta-Model of the Diesel Company Proposed Business Model.

Order fulfillment allows organizations to offer higher levels of customer service at lower costs, while reducing time and resources for companies to focus on other fundamentals of their business. The business process proposed in this system will apply the process as follows:

- Receive products and provide inbound quality checks.
- Provides storage for products (usually on a monthly basis)

- Provides inventory control management services, including on-line, real-time access to inventory
- Monitor and fill the inventory process.

From the process will be strategically computerized, but each process requires additional new divisions to complement each of the roles that are in the business proposed in order fulfillment. Stock keeping unit is the strategy need to make this business process into getting the number of stocks keeping unit right is critical. Too few, or the wrong items, and the company will lose sales and customers to rivals.

Too much stuff are also not a good thing in this process, because it can add to the costs incurred for depreciation of goods that are too long not sold and stored in the warehouse. Previous business objectives and processes are not optimal in promoting products and performance exchanges which both make it difficult to design cross-functional processes.

The four functions that most influence the physical flow of the fulfillment process are described orders: purchase, production, logistics, and marketing. Marketing, for example, is managed as a profit center. Marketing managers are valued based on their ability to increase sales. Fulfillment of good orders often means short grace periods supported by extensive inventory made as close to the customer as possible. Therefore, we have built a fulfillment network that can be reached through the cloud. In strategic planning this means that you need to be able to implement the proposed business process as a whole. changes from this business process will carry a computerized process, in which each division has its own data and will be transferred to the data center to be reported as the owner's decision as a reference for what procurement is to the vendor to be the item later stock sales.

From the new process of data held by each division, there is a limit of access rights to maintain the interference of matters in other divisions. Purchase department data only has the procurement process, invoice letters and stock items, data that can be accessed by the purchase department is taken from the warehouse data. The new division stretched by this planning is the accounting finance division which was previously done by the sales order division now in the business proposed to have its own division to trim on processing time and focus on its role.

5. CONCLUSION

This discussion proposes strategic planning to support new business processes in diesel companies to implement order fulfillment that is expected to support performance and performance in the old and new divisions through enterprise architecture archimate planning, while all the processes proposed are starting implemented into the company, it is expected that this order fulfillment can reduce the efficiency of human resources, access information easily.

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