

Enterprise Resource Planning for Indonesian Insurance Company

Natanael Alamas, Marcelina Anggraeni

Abstract: Like others, insurance company in Indonesia faces challenge to adopt digital transformation. Digital transformation helps them to compete against each other and also to attract their customers. This study is performed through literature review in order to create conceptual enterprise resource planning design that can help insurance company in Indonesia to adopt digital transformation. Based on our study, enterprise resource planning system can help insurance company to achieve this objective because it can integrate process between different business functions and provide fast and accurate information. First things to do if we want to implement enterprise resource planning is to understand the current situation of the company. We must know the existing business process, its systems, and the relation between business function. And then, we can start creating new enterprise resource planning design based on the business functions and process.

Keywords: enterprise resource planning, e-business, information system, insurance.

I. INTRODUCTION

In recent years, most business starts to use digital technology in order to achieve their target. Digital technology can be used in any part of business. Starting from simple process like advertising product on social media to complex process like assisting management's decision using information dashboard. As business continues to growth, it becomes more and more relying on digital technology. The process of integrating digital technology into all areas of business is often called digital transformation. Digital transformation is defined as using of new digital technology that enables major improvements of business and affecting all aspects of customer's life [1]. Digital transformation strategies have four important aspects, which are: the use of technologies, changes in value creation, structural changes and financial aspects [2]. Digital transformation will change the business model of the company, which occur on resources, cultures, operational methods and processes [3]. Every businesses always strive to provide good services for their customers, and insurance companies is no exception. Many insurance companies in Indonesia provide similar services for the customers. Surely customer will be more attracted to insurance company that provide best services for them. So, insurance companies need to compete against each other in order to attract new customers and retain existing customers [4]. Digital technology become important factor to provide innovative

product and good services for customers. Some of main processes in insurance company that being innovated by technology are customer relationship, product development, claim management, and back office activities [5]. And currently some insurance companies give online services for customers such as: online claim, online registration, electronic billing, etc. [6]. But these online services are separated with the main processes which cause business processes are not fully integrated end-to-end. One disadvantage caused by situation is customer data's integrity become lost in transition from one system to another system. Business processes that is not fully integrated end-to-end is also take more time to be finished and more prone to error.

This study will try to solve the problem of non-integrated end-to-end business processes in insurance company by proposing a conceptual design of ERP system. This conceptual design can help as guideline for insurance company that want to do digital transformation by using ERP system. Through digital transformation, insurance company can continue to improve their business process performance, provide better quality services for their customers, and finally achieve their business objectives.

II. LITERATURE REVIEW

One of technology that can support digital transformation is Enterprise Resource Planning (ERP). ERP is mentioned as packaged business software that capable to share and access data and information in real time. ERP allow company to integrate business processes of each department [7]. Study [8] mentions that ERP system enables organization to integrate all primary business processes in order to improve efficiency and maintain competitive position. ERP also described as database systems that support medium and large enterprises management by collecting and processing data. ERP is believed to bring benefits such shortening process time, information integration between departments, and improve processes' efficiency. More and more organizations are beginning to implement ERP because they see many benefits by using ERP [9].

As example, ERP has been implemented in several industries. Some commercial banks in Jordan have implemented ERP from 2013. Although based on study [10], there is not much impact on financial performance, ERP helps to improve the integrity and quality of data during the process of its operations. ERP also makes an impact of overall performance of banks, because it helps to reduce time to finish tasks within organization, and provide fast and correct information for decision making process. Turkish Red Crescent Society implements ERP to integrate between headquarter and its related services in different regions, so they can be provided with fast and right

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information [11]. Healthcare organizations become more and more evolved in recent years and they deal with huge data amounts. ERP helps this situation by integrate various systems in Healthcare organizations and join those systems into a single system which allows data and information sharing within organization. However, study [12] also concludes ERP systems are expensive and the organizations become dependent on vendor for maintenance and further system upgrade. Study [13] reviews ERP implementation in a university in Nigeria. The research shows that user satisfaction is improved after they starts using ERP. Users feel that the overall business processes are improved. Study [14] mentions that ERP implementation is about transforming entire company to a higher performance level through streamlined business process. If successfully executed, it changes company to conduct better business. Successful implementation relies on effective project management principles as it tries to integrate the activities between customers and vendors. Support from top management is also valuable because cross-functional implementation teams might need strategic direction from top management. ERP also have been implemented in low-middle businesses in Indonesia. PT. CP started to implement ERP in 2010 to improve business process of marketing operational. They created good planning which allowed them to finish the implementation on-time. They also shared implementation target among stakeholders which made stakeholders contributed and cooperated to successfully achieve the goal of project [15]. Study [16] suggests managers of the organization that want to implement ERP must have good understanding about their requirements as it is affecting which ERP system to be chosen. ERP implementation should be in-line with business needs. Study [17] mentions that ERP systems have following modules in common:

1. Financial: Module to manage budgeting, cash flows, accounting, financial report, and other related functions.
2. Human Resource: Module to manage human resource's payroll, benefit, work time, and other information.
3. Order to cash (Income): Module to manage sales entry, shipment, stock, payment received, and commission.
4. Purchase to pay (Expense): Module to manage resource purchase, resource stock and warehouse, and cash expense.
5. Manufacturing (Production): Module to manage production schedule, production flow management, resource used during production, and production control.
6. Customer relationship management: Module to manage services for customer such as customer contact and call center support.

Study [18] emphasizes the need of ERP implementation in insurance industry to achieve business transformation. ERP implementation can follow some architecture types. Architecture play major role to determine its success and durability for the company. There are one-tier architecture, two-tier architecture, three-tier architecture, and web architecture. Each architecture will have their own advantages and disadvantages [19].

III. METHODOLOGY

This study is performed by identifying, evaluating, and combining information from several other studies which relevant with the study's objective. First, we started by introducing the background, which are: objective of insurance company, challenges faced by insurance industry to achieve their objective and how information technology can help insurance company to overcome the challenges. Second, we reviewed various literature to understand about ERP, such as: definition of ERP, functions of ERP, architecture of ERP system, examples of ERP implementation in several industries, expected result by organizations from implementing ERP, advantages and disadvantages of having ERP, and also some factors that affect successful ERP system implementation. This study also utilized information from writer's experience with some insurance companies in Indonesia as insight to propose the ERP implementation. Third, we assess the current situation of insurance company such as their systems, business process, and business functions. Using that information, we can start creating the conceptual enterprise resource planning design.

IV. RESULTS AND DISCUSSION

A. Current Situation

Information technology is an important aspect for insurance company, like any other businesses. Insurance company is a financial organization which provide services to the customers. Customer information is very valuable for insurance company's business. Customer information must be kept accurate and safe from outside intervention. Newly established insurance company always start from building a core system that will be used to maintain customer information. Core system function is to provide basic services of insurance policy and customers such as customer management, product management, policy management, and claim management. Core system are used by all related departments that need to access customer information to perform their jobs. Additional features that provide more values for customers are built outside core system as external systems. These external systems are usually connected with the core system, because they need to use information available in the core system to perform their functions. Example of external systems are sales portal, claim portal, customer portal, and payment services. Beside departments that handle customer related needs, there are also other departments that commonly exists in a company. These departments mostly handle the needs of company and the employees. Example of these departments are human resource, procurement and finance & accounting. They usually have their own system outside core system because that their functions are mostly unrelated with customer information. Table 1 shows current condition of business functions and their relation with core system in three of top ten insurance companies in Indonesia.

Table-I: Business functions and systems of three insurance companies in Indonesia (source: author)

	Company A	Company B	Company C
Customer Management	Core system	Core system	Core system
Product Management	Core system	Core system	Core system
Policy Management	Core system	Core system	Core system
Claim Management	Core system	Core system	Core system
Sales Portal	separate from core system	separate from core system	separate from core system
Customer Portal	separate from core system	N/A	N/A
Claim Portal	N/A	separate from core system	N/A
Payment Services	separate from core system	separate from core system	separate from core system
Finance & Accounting	separate from core system	separate from core system	separate from core system
Procurement	separate from core system	separate from core system	separate from core system
Human Resource	separate from core system	separate from core system	separate from core system

B. Business Process

Insurance company’s main business is to sell insurance policy to customers. Insurance policy is a contract between insurance company and their customers. Insurance policy states that insurance company will provide coverage money if certain condition are fulfilled, as long as customers continue to pay premium to keep their policy in-force. This contract also mentions some services that customer can have, related with their insurance policy. As shown in Figure 1, insurance company commonly have following functions as their basic services:

1. **Product Management:** Insurance product is a set of arrangements that is provided for customers. It consists of list of benefits that will be covered, conditions that must be fulfilled to receive the benefit, and rules for maintain the policy. Product Management is functions to configure insurance product benefits, conditions and rules inside the system. Having this function inside system will help employees from doing manual works concerning the conditions and rules.
2. **Customer Management:** Customers are main business partners of insurance company. How big insurance

company is often link with how many customers that they have. Customer Management is functions to maintain customer information, such as customer profile data, medical information, and transaction history. Customer information are very valuable because it can be used to analyze what kinds of new services and products that will be created in the future.

3. **Policy Management:** Policy Management is functions related with insurance policy life cycle. Policy Management usually consists of two big parts: policy registration, and policy maintenance. Policy registration is services that related with customers buying insurance policy. Policy Maintenance is services that customers can request after they purchase insurance policy like changing policy content or cancelling policy.
4. **Claim Management:** Claim is act performed by customers to request coverage benefit from insurance company. Customer are required to provide information and documents as a proof that the conditions to receive benefits are fulfilled. After claims are registered, Claim Analyst will check whether is valid. If claim is valid then benefits will be paid to the customers.

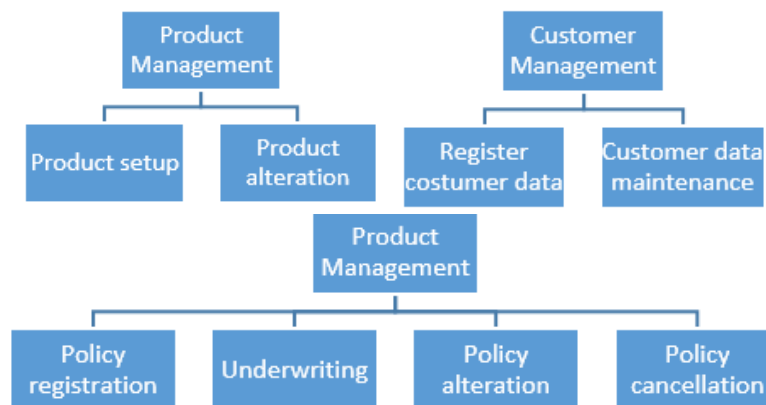




Fig. 1. Common functions of insurance company's system (source: author)

C. ERP Solution

By understanding the business process, we are one step closer to define suitable ERP system for insurance company. According to study [19] and [20], ERP system can be breakdown into three layers: presentation layer, application layer, and database layer. Presentation layer is where data is presented to the users of system. Application layer is responsible for executing business logic and also acts as bridge of communication between presentation layer and database layer. Database layer is where data is stored and maintained. These three layers can be adjusted depending on the business process of the organization. For insurance company, we propose following layers of ERP:

1. Presentation Layer: How many presentation layers do company need can be determined from how many type of users and what kind of functions do they need. Presentation layer is where users interact with the system, so its design plays important role to attract users. Presentation layer should attractive, simple, and easy to understand for users. It also needs to offer useful functions that bring values for users such as time saving, reduce work, etc. Presentation layer also need to be constantly updated with latest technology, especially technology that being used by most people, such as website and mobile application. For insurance company, following presentation layers are going to be useful:

- A. Customer portal: Website or mobile application where customers can view their information such as basic profile, policy information, and transaction history. They also can send request to company to update their information, altering their policy, and so on.
- B. Claim portal: Website or mobile application where customers can register for claim and monitor the progress of claim process. Customers can be notified when they are requested to submit certain documents and then upload it into the system. They can also be notified whether their claims are accepted or rejected, and also when the benefits are going to be paid to them.
- C. Sales portal: Website or mobile application which mainly used by sales agent. Sales agent are people that meet with customers to offer insurance product. They can be employees or only act as partner of the company. Function of this layer is to input customer information into the system when they agree to buy insurance policy. Inputted information usually are customer profile, type and parameter of product they bought and health questions for underwriting purposes. On this layer, we can also display attractive insurance product

information that can help sales agent to selling the product.

- D. Employee Web Form: This is where employees of company interact with the system. Information and functions that are available are based on which departments they are in. We suggest to use web-based application to allow more flexibility for users to access the application. Web based application also easier to deploy because it doesn't need any installation in user's computer.
 - E. Payment Services: This layer serves as payment channels available to the customers. Having many payment services will make customers feel more convenient because they can choose whichever more suitable for them. But having many payment services will also increase cost for company, so it should be adjusted with company's capability. Example of payment services such as ATM, internet banking, mobile banking, e-money, credit card, and various merchants.
2. Application Layer: Application layer is where most complex works are performed. It is connecting presentation layer and database. For example, when customer input register for claim, application layer will receive the data and perform logic based on business process. If it needs certain data to perform its process then it will retrieve that data from database layer. After or while performing its process, it can also store data into database layer. Application layer consists of several modules, each with their functionality based on business units or departments. For insurance company, application layer should have Product Management, Customer Management, Policy Management, and Claim Management as its main modules. These main modules' functions are related each other and they are using same data. Additional modules which also important are Human Resource, Procurement, and Finance & Accounting. While these additional modules' functions are different with main modules, they sometimes need data produced by main modules. For examples, human resource team can calculate sales team's commission amount based on number of insurance policy that they sold, or accounting team can set general ledger based on payment received from and payment sent to customers. Having all these modules inside same system will reduce complexity on how to share data between them. And we also don't need to create additional services or API to communicate between separate systems.
3. Database Layer: Database layer is the heart of ERP system. All data inputted by

users, or created by process are stored in database layer. Database layer also used to provide necessary information for users. Whenever users request certain information, application layer will retrieve data from database layer and transform it based on function that users perform. Because database layer is very vital, its security, integrity, and reliability are need to be

properly maintained. There should be no unauthorized person that able access database directly by any means to keep it secured. Sensitive data must be hidden and cannot directly modified by users to maintain data integrity. For reliability, it is suggested to have several replications of database. The replica can be operational in case of failover.

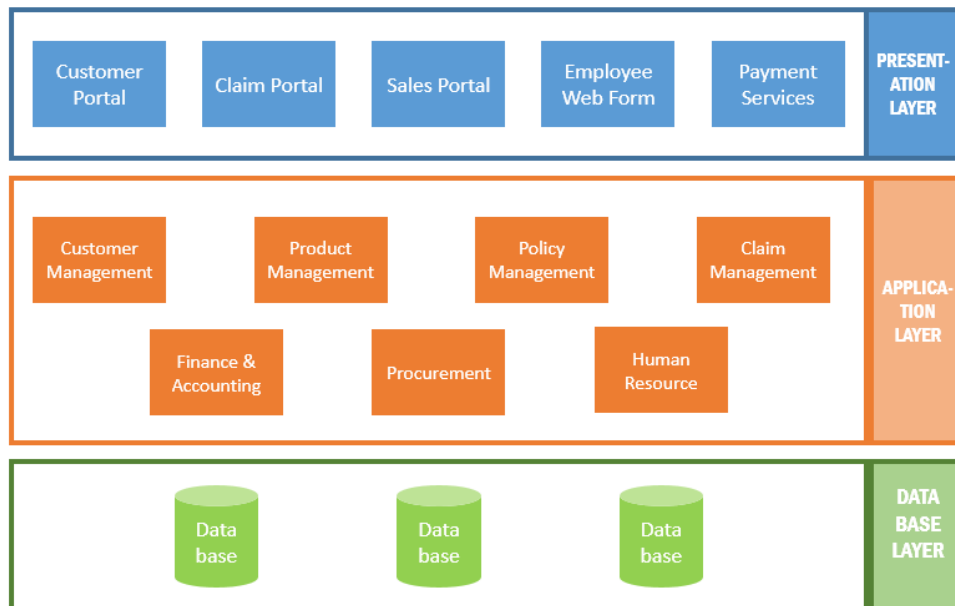


Fig. 2. Proposed ERP layer for insurance company (source: author)

V. CONCLUSION

Implementing ERP in insurance company is a challenging process. Old and established insurance company that already operates for some years will need to do a lot of works if they are going to implement ERP. Moving from existing core system, especially if it already established for long time, to ERP will take lot of transformation and changes. Changes will happen in technology aspect, business process aspect, and human aspect. Technology aspect is affected by ERP software that being used. If core system is using different technology with existing core system then IT team need to learn the new technology so they can understand and able to support it. Business process aspect is affected by the changes in process flow. Process flow should be streamlined and integrated between different modules during ERP implementation. Human aspect involves users and other stakeholders that usually use existing core system. They need to adjust and learn how to use the new ERP system. New insurance will not face similar challenges as the old insurance company to implement ERP because they don't have core system that already established for long time yet. But cost will become big challenge for them. To implement ERP will take a huge cost. So, management need to plan the implementation well to avoid any problem and failure.

Despite all of the challenges, having ERP implemented definitely bring benefits for the company. Process will be more effective and efficient because process between modules are integrated and streamlined. Users can get fast and accurate information because all modules in ERP are

sharing same data. Future enhancement will also be easier to do because services are reusable. Easier future enhancement will also take less cost than normal.

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