STRATEGIC PLANNING OF INFORMATION SYSTEMS AND TECHNOLOGY AT COMPANY X

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ABSTRACT

When applying an information system, companies need a good planning that when implemented can run in in line with the company's existing business strategy where it can give contribution in competition with others company among the same industry. PT. X is one of the company that engaged in the field of drugs distributions, where the conditions of competition that exists today made the strategic planning required is not only related to the business alone but for information systems that applied in the company.

As a major pharmaceutical companies, PT.X also have problems that must be solved, such as delays in delivery to stores and pharmacies, bad storage system that made the drugs often expired, poor data accuracy, as well as the problems in the payroll system and commissions to salesmen. Likewise, over the time, new competitors trying to enter the Sulawesi market.

To solve the problems and make recommendations to the PT. X, the phenomena that occur in the field will be recorded and analyzed using SWOT method to determine the position of a strategy for PT. X which will be the basis for creating a business strategy that can be used to improve competitiveness. The next process is to define the needs of the company through the Balanced Scorecard which viewed from four perspectives by taking the basis of SWOT analysis.

The result of the study is a recommendation of application portfolio as well as the plan for information technology development that can be implemented by PT.X in the future.

Keywords: Strategic Planning, Information System, Information Technology, SWOT analysis, Balanced Scorecard Analysis

1.Introduction

Medicine is an important need for human beings. In addition, as commercial goods medicines also have a social value as it relates to human rights, especially the right to obtain the health services. In the current era of globalization, one of the components that expected to improve the company's competitiveness, effectiveness and efficiency is the Information Systems (IS) and Information Technology (IT).

PT. X is one of the drugs distributors with its target market is the whole island of Sulawesi, with its business process such as procurement of goods, sales, warehousing systems, distribution systems, accounting and financial systems, and human resources.

The development of the IS / IT at Company X it is based on the spontaneity of the owner. The outcome was the development of the IS / IT is not focused, resulting in many problems often occur, such as delays in delivery to stores and pharmacies, storage system is so bad that the drug is often expired, data accuracy was lack, as well as the problems in the payroll system and the commissions to salesman. Besides all of that, over the time, there are new competitors trying to enter the Sulawesi's market.

2.Literature Review
2.1 Strategic Planning
       According to Ward, (Ward, 2002) in his book Strategic Planning for Information Systems, strategic planning is a process to identify, evaluate, and decide on a strategy that can be called a strategy formulation. To achieve the strategy, it is carried out by planning a number of actions required to develop and use the resources effectively.

2.2 IS/IT Plannning Process
       According to Ward (Ward, 2002) strategic planning of IS/IT must be based on internal and external business environment as well as internal and external IS/IT, then the data will be analyzed in the strategy process. Through the process, it will generate some IS business strategy, IS/IT management strategy, and IT strategy. The result then analyzed and resulted in a future applications portfolio. The portfolio will be used as the basis for the development of an information system for the future use of company. The application development will affect the company internal IS/IT environment. Figure 1 illustrates the IS/IT strategic planning process.
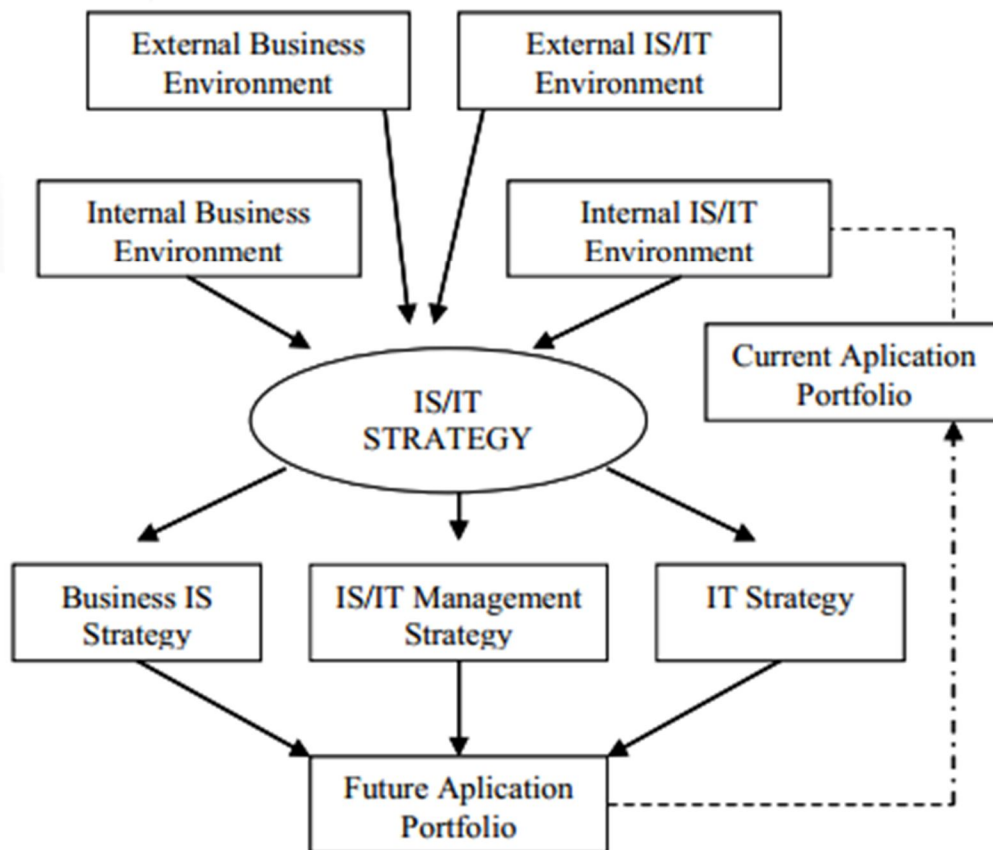

Figure 1. IS/IT Strategic Planning Process

3.Methodology

The methods of analysis used in this strategic planning of IS / IT are divided into 5 part which is Internal Business Analysis, External Business Analysis, Internal IS/IT Analysis, External IS/IT Analysis and Strategy Formulation. In Internal Business Analysis, we use Business Strategy Analysis and Value Chain Analysis. In External Business Analysis, we use PEST Analysis and Porter's Five Forces Analysis. For Internal and External IS/IT Analysis we analyze the IS/IT Infrastructure, IT/IS Human Resources, IT/IS Management Policy, IT/IS Trend for now, and McFarlan Strategic Grid. As for strategy formulation, we use SWOT Analysis and Balanced Scorecard Analysis to formulate the strategy into 3 part which is Business IS Strategy, IS/IT Management Strategy, and IT Strategy. This 3 strategy then form a future application portfolio.

3.1 Business Strategy Analysis

An analysis which conducted on the vision, mission, goals, and objectives of Company X and even the organizational structure to gain the factors that affect the needs of IS / IT that has the potential to developed.

3.2 Value Chain Analysis

Value Chain Analysis is an analysis of a set of activities undertaken within the company from input of raw material to final product in order to provide an understanding of the business processes that occur (Laudon, 2013). Figure 2 is the value chain analysis of Company X
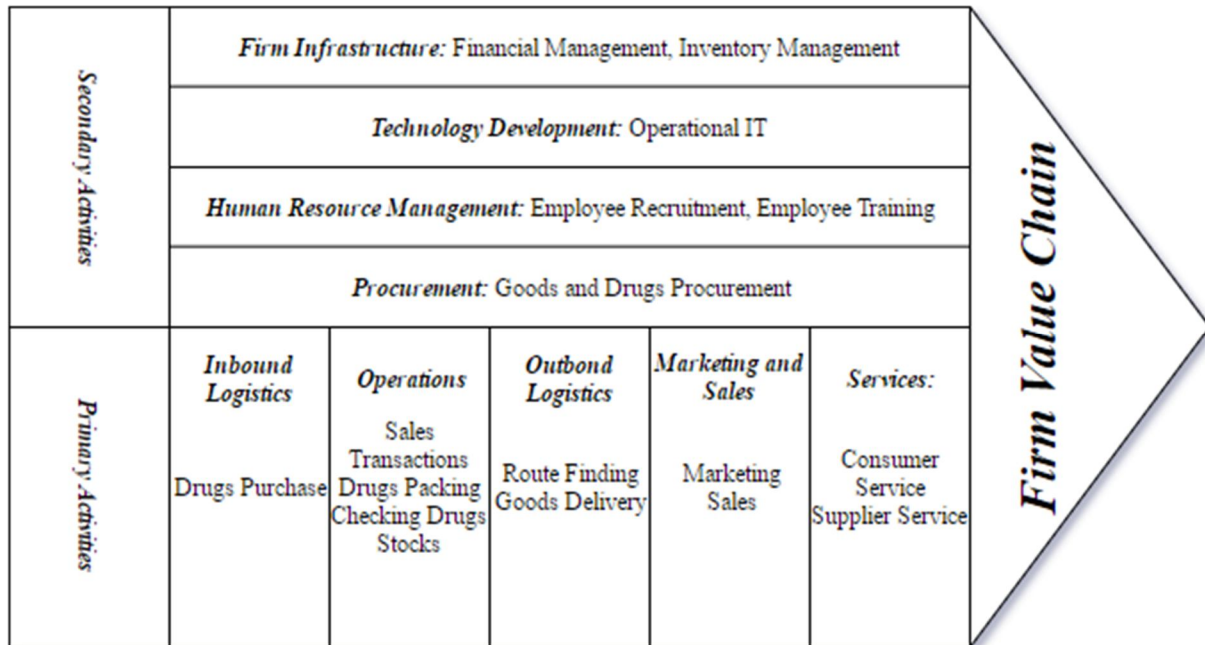

Figure 2. Value Chain Analysis

Value chain analysis is divided into two parts, namely primary and secondary activities. Primary activities are divided into five parts, which is inbound logistics, operations, outbound logistics, marketing and sales, and services. As for the secondary activities are divided into 4 parts: firm infrastructure, technology development, human resource management, and procurement.

3.3 PEST Analysis

A PEST Analysis is an analysis of the external environment that affects the company (Ward,2002). PEST is an acronym for the Political, Economic, Social and Technology factor of the external environment. Such external factor usually can't be controlled and it can become an opportunity or a threat.

3.4 Porter's Five Force Analysis

Competitive analysis is used to evaluate the structure of an industry business environment and the challenges from competitors in the same industry. There are 5 aspects that presented in this analysis which is bargaining power of buyer, bargaining power of supplier, threats of new entrance, threat of substitute product, rivalry among existing competitors (David,2015).

3.5 Internal and External IS/IT Analysis

Internal analysis of IS / IT in general consists of the identification of the infrastructure, resources, as well as the current application portfolio that is mapped to the analysis McFarlan's Strategic Grid. It also discussed the existing management policy of IS / IT.
External analysis of IS/IT emphasis on technology trends as input, in which the latest technology trends that can be applied and use in accordance with the business strategy as the output. This analysis is used to obtain the data of potential applications in the future

3.6 SWOT Analysis

SWOT analysis is an analysis to identify a various factor systematically to formulate the company's strategy. This analysis is based on the relationship between the internal element, namely the strengths and weaknesses and the external elements which is opportunities and threats. (David,2015)

The identification of the SWOT factors acquired from all the analysis above in addition the Interview and Observational result of Company X, then weighted to determine the SWOT quadrant strategy that will be selected. The weighting method use IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary).

Table 1. Internal Factor Analysis Summary (IFAS)

Strength	Grade	Value	Score
Organizational Structure in the form of functional	0.032	2	0.064
Providing distribution services of high quality drugs at competitive prices	0.042	4	0.168
Employees with high loyalty and high capability	0.045	2	0.090
High working capital and high liquidity	0.043	2	0.086
Having a supplier with national and international quality	0.041	4	0.164
Having a regular customer and continues to grow	0.040	3	0.120
Following the rules established by the Director General Health Indonesia	0.054	4	0.216
Have a good employee training program	0.036	2	0.072
Using Fiber Optics for a faster and stable connection	0.030	2	0.060
IT resources have the potential to be developed	0.035	2	0.070
	0.398		1.110

Weakness	Grade	Value	Score
Doesn't have a blueprint for strategic planning of information systems	0.048	4	0.192
Lack of IS/IT infrastructure development	0.048	4	0.192
Drugs delivery often got delayed when distributed to the consumer	0.062	1	0.062
Lack of employees regeneration	0.043	3	0.129
Doesn't have IT division to manage the IT resources	0.046	2	0.092
IT Human Resource have not able to improve competitiveness	0.048	2	0.096
The amount of drugs found expired in warehouse is high	0.061	1	0.061
Procurement of goods and drugs happen to be spontaneity	0.056	1	0.056
Lenghty Transaction Process for Consumer order	0.055	1	0.055
Does not have a strategic application	0.046	2	0.092
Financial information hasn't been able to be a factor in creating value	0.053	3	0.159
Requires 1 point specifically to accommodate all the needs of Company X IT network	0.036	4	0.144
	0.602		**1.330**
	1.000		**-0.220**

Table 2. External Factor Analysis Summary

Opportunity	Grade	Value	Score
The drug industry that are constantly evolving and needed for everyone	0.082	4	0.328
The relationship between the supplier and the company maintained properly	0.076	4	0.304
Utilization of the latest technology trends such as web technology to build the company's website, to give information about the company to the public	0.054	3	0.162
Utilization of mobile application that can help the company salesman in the reporting field conditions	0.066	3	0.198
Upgrading an existing inventory systems into a barcode inventory system that can help to reduce time and effort in arranging drugs - drugs	0.079	3	0.237
Using a VPN to access the Internet network, in order to improve the security of data transfer.	0.057	3	0.171
Demand for drugs are constantly increasing	0.089	4	0.356
Market Demand to the low price with high quality drugs	0.064	4	0.256
A decrease in the number of Pharmaceutical Company and Pharmacies in North Sulawesi	0.086	4	0.344
The number of consumers do not have significant impact on Company X	0.036	2	0.072
	0.689		**2.012**

Threat	Grade	Value	Score
Drug prices tend to rise each year	0.057	2	0.114
Fake drugs issue	0.064	2	0.128
Too dependent on drugs suppliers	0.078	1	0.078
The flourish North Sulawesi market attracted many new competitors	0.046	2	0.092
Indonesia economic conditions are less stable in recent year	0.066	4	0.264
	0.311		**0.676**
	1.000		**1.336**

For IFAS, the factors used are the strength and weakness, while for EFAS, the factors used are the opportunity and threat. Weighting is done by giving weight ranging from 1,000 (very important) to 0,000 (not important). The total weight of the must be equal to 1,000 for IFAS and EFAS. After the weighting, then each factor is given a value of 1-4 which for strength and opportunity factors, number 4 on the factors that is very powerful and the numbers 1 to factors that have weak influence, while the weakness and threat factors, the numbers 1 to factor with powerful influence, and number 4 for the factor a weak influence. The values and weights then multiplied to obtain a score for each factor. The results of the score then subtracted to obtain the coordinates of SWOT quadrants that determine what strategies will be chosen.
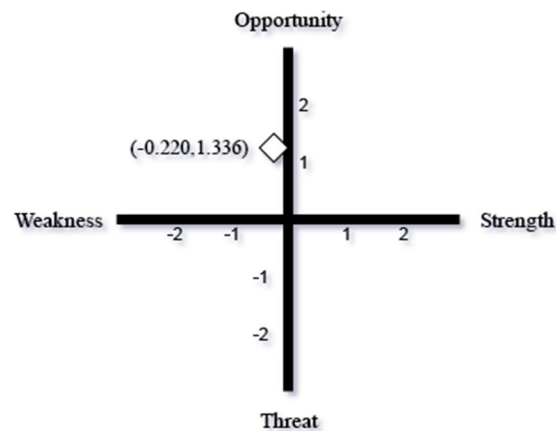

Figure 3 SWOT Quadrant

According to figure 3, the quadrant that chosen is the Weakness Opportunity quadrant, in which we find from the results of IFAS and EFAS table. The value obtained is -0.220 for IFAS and 1,336 for EFAS. With the value of IFAS is the coordinate axes X and Y axes EFAS are the coordinates, the position PT.X on SWOT quadrant is at the point (-0.220,1.336) that quadrant WO strategy that focuses on repairing the existing weaknesses by exploiting the emerging opportunities.

3.7 Balanced Scorecard Analysis
According to Balanced Scorecard Institute, Balanced Scorecard Analysis used to measure business objectivity. Balance Scorecard will identify the business objectives to be achieved, the information and data required, and measure the success of the existing strategy. Balance scorecard is divided into four interrelated viewpoints, which is financial perspective, customer perspective, internal business process perspective, and learning and growth perspective.

Table 4. Balanced Scorecard Table

Financial Perspective		
Objectives	Measurement	Information Need
Fixing Cost Structure	Cost per Sale Percentage	Financial System
Maintain Companies Liquidity	ROA Percentage	Financial System
Consumer Perspective		
Objectives	Measurement	Information Need
Providing quality products	The number of defective or damaged products	Warehouse System
Providing quality services	Consumer Satisfaction	Helpdesk System
Internal Business Perspective		
Objectives	Measurement	Information Need
Quick response and precise control over consumer complaints	Number of incoming and resolved complaints	Helpdesk System
Use of Effective and Efficient Distribution System	Amount of Delivery Delay	Distribution System
Upgrade Purchasing System	The amount of drugs purchased	Purchasing System
Upgrade the Storage System	The amount of drug expired in warehouse	Barcode Inventory System, Warehouse System
Upgrade the Marketing System	New Supplier and Consumer	Marketing System, Company Website
Upgrade the Sales System	The amount of drugs sold, Speed Inquiry Process	Sales System, Company Website
Learning and Growth Perspective		
Objectives	Measurement	Information Need
Improvement and Empowerment of human resources	The amount of training conducted	Training Management
Sustainable Utilization of Information System	Realization of Information System Implementation	IS/IT Blueprint
The use of technology in improving the quality of services provided	Number of Technological Development	Barcode System Inventory, Company Website, Network Quality Improvement, Server Company Procurement
Development of IT Division	Quality of employees recruited	IT Employee Recruitment

4. Result

After the results of the various stages of assessment has been done, then the next step is to formulate the strategy planning of IS / IT Company X, in which covering the IS business strategy, IT strategy, and IS/IT Management Strategy. The recommendation for IS business strategy is to develop a new application based on Balanced Scorecard analysis, and upgrade the existing application to follow the result of Balanced Scorecard. In this strategy we suggest 6 Application in which 2 was an upgrade for the existing application, and 4 new applications to help Company X achieve their vision and mission. As for IT strategy, we recommend they build an IT division and develop a dedicated server for company. As for IS/IT Management Strategy, we recommend they built IS/IT Blueprint and made a continuous evaluation for their strategy implemented.

5. References

Ward, John; Joe Peppard. 2002. "Strategic Planning for Information System. 3rd Edition", John Wiley & Sons Ltd, West Sussex

David, Fred R; Forest R.David. 2015. "Strategic Management Concepts and Cases. 15th Edition", Pearson Education, London 149, 259

Balanced Scorecard Institute (BSI), 2015. "Strategic Planning Basics". Retrieved from https://balancedscorecard.org/Resources/Strategic-Planning-Basics

Laudon, Kenneth.C; Jane P.Laudon. 2013, "Management Information Systems: Managing the Digital Firm 13th Edition", Pearson Education, London p132