

Analysis of Strategic Planning and Implementation of Information System Using Ward and Peppard

L Muhibah¹, W Susanty¹

¹ Information System, Computer Science Faculty, Bandar Lampung University, Indonesia

1. Introduction

1.1 Background

Information systems have evolved over time. The development of information technology have led to changes in the role of the role of efficiency and effectiveness become strategic role. The role of efficiencies that replace human tasks with a more efficient information technology. The role of the effectiveness of which is to provide information for management decision making enabled. Now, the role of information technology is not just for efficiency and effectiveness, but also a strategic role to win the competition (Hartono, 2006).

The information system is an important tool to achieve organizational goals effectively. Every organization should systematically identify information needs and analysis functions performed mission, who did it, and Opera support the data needed to perform a variety of functions and processes needed to structure the most useful information (Tozer, 1996). Information system development is not planned systematically lead organization does not have the priority scale development projects IS / IT and impressed patchy. This way it would impact on the productivity of the organization (Ward and Peppard, 2002). Information systems strategic planning is a systematic approach to determine which are most effective and efficient relating to the satisfaction of the needs of information (Ward and Griffiths, 1996).

Consider any potential future that will be faced by the organization, strategic planning information systems can help to anticipate the development of information technology in the future. To answer the above conditions and problems, then here I do resume journal entitled "Analysis and Information Systems Strategic Planning Implementation Method Using *Ward* and Peppard".

2. Basic Theory

2.1 Review of Literature

Angelina and Day (20012) in a scientific publication titled "Developing Information System Strategic Planning in the Directorate General of Animal Husbandry and Health, Ministry of Agriculture". During this time the Directorate General of Livestock and Animal Health not implemented a strategic information system, therefore the system is not running optimally in the case of each regional office sent a report of the population, slaughtering livestock production by email or fax to the office of the Directorate General. This causes problems in data collection, data processing, and dissemination of data. It takes more time to access data, verification, and validation for farm produce statistical data useful in predictive analysis of future needs of consumption, export, import, and the decision to develop animal husbandry and animal health. Currently, the data analysis is still done manually, although the data will be used to determine the development of data and planning for the future program. In addition, there is a bit of an optimal workforce in both implementation and use of technical fields. Data Collection Methods of primary data and secondary data sources (references relating to research). The data collection is based on the study of literature (books and journals), observation and interviews. The method of analysis of internal and external business environment using SWOT and SWOT matrix, environmental analysis / IT internal use of IT Balance Scorecard method and analysis of the existing infrastructure, environmental analysis / IT analysis technologies under current trends. Other research titled Strategic Planning Higher Education Information System (Henderi, 2013). This study takes a case study on STMIK Prog, where the strategic planning of information systems and the model was developed based on the stages of analysis about the aims and problems / needs information(*goalandproblem*), *Critical Success Factor* (CSFs), a SWOT analysis,

analysis of the impact of information technology (*technology impact analysis*) and analysis of vision or a strategic view of the system (*strategy vision system*) and a review of the model of business functions (*business process*) organization. Determination of information systems strategic planning and selection model developed subsequently determined by the specific needs and determinants with attention to the rules and standard procedures.

3. Results Analysis and Discussions

3.1 The Usage of Ward and Peppered Method in IS / IT Strategic Plan Compilation in DISHUBKOMINFO East Lampung

(Journal of the International Conference on Information Technology and Business (ICITB) ISSN 2460-7223 © 2015 Journal details by Abdul Lathif Sampurna¹, Abdi Darmawan² and Handoyo Widi Nugroho³ of Master of Information Technology, Institute of Informatics and Business Darmajaya, Indonesia). DISHUBKOMINFO in carrying out coordination tasks in transportation, communication and informatics charged to be able to work quickly, while the information systems owned and used by DISHUBKOMINFO for this is still not optimal. Research Methodology in this journal includes: first data collection of primary and secondary data sources where the data collection is based on questionnaires and interviews. Then analyzes the business environment internally and externally using SWOT matrix SWOT and *Critical Success Factor*, environmental analysis / IT internally using *IT Balance Scorecard* and analysis infrastructure existing, environmental analysis / IT external analysis technology that is a trend today, The following is a discussion of the method of Ward and Peppard at the inputs:

3.1.1 Business Environment Analysis Internal

1. Strengths (power)

- a. Achievement DISHUBKOMINFO in the development of optical fiber networks as the basis for further development of the IT company.
- b. Organizational structure and function of duty has included the implementation of regional autonomy DISHUBKOMINFO.

2. Weakness (Weakness)

- a. The quality and quantity of human resources are still inadequate.
- b. Selfishness is at the head of the sector.
- c. There are no regulations governing the area of e-government development.
- d. Conflicts of interest.

3.1.2 External Environment Analysis Business

1. Opportunity (Opportunity)

- a. The development of information technology are growing rapidly, so the government charged with using technology in government activity.
- b. President Jokowi want to implement e-government and the commitment of Indonesia as a maritime nation.

2. Threats (Threats)

- a. Lack of understanding of the reform impact on the development of government.
- b. Frequent power outages can cause IT equipment does not work optimally.

3.1.3 Environmental Analysis / IT Internal

Information management systems and information technology DISHUBKOMINFO is still not effective.

3.1.4 Environmental Analysis / IT External

1. Public awareness is not balanced with the pace of technological development and facilities and public infrastructure. From the analysis of SWOT matrix, it is known that DISHUBKOMINFO are in quadrant II, which means that despite the many challenges but still has the power of DISHUBKOMINFO internally. The strategy should be applied to be used long term by using Diversification Strategy.

a. IT Balanced Scorecard (analysis of IS / IT Internal)

Results The weighting is carried out as follows:

- a. Financial Perspective criteria very well
- b. Customer Perspective (Orientation Users) very good
- c. Business Perspective Internal (Repair Operations) very good
- d. Learning and Growth Perspective (Orientation fore) criteria very well

b. Environmental analysis / IT internal and external

Environment of IS / IT internal analysis of existing infrastructure. Environmental Analysis / IT externally conducted benchmark against other institutions and the trend of today. Then the mapping *Future Application Portpolio* using *MC Farlan Strategic Grid*.

Table 1. Table Analysis *Application Portfolio* on DUSHUBKOMINFO

Strategic	High Potential	Strategic	High Potential
		- Executive Information System - Monitoring OLAP Analytical Processing (OLAP)	- Telecommunication Tower Data Information System - Celullar Tall - etc
Key Operational	Support	Key Operational	Support
SMS Gateway	SIPKD, SIPPDA, SI Electronic Letter, Dishubkominfo Website, Office Automation dan LPSE	- Public Complaint Information System - Inventory Information System	- Knowledge Management System - E-klipping - E-learning

On the output is not dijelaskan *IS / IT Business Strategy* and *IS / IT Management Strategy*, Described only *IT / IS Strategy* which will be described in the table below. The following is a discussion of the method of Ward and Peppard on the outputs:

3.1.5 IT / IS strategy

- a. Replacing staff with recruiting new employees with improving the standard of IT skills that must be possessed.
- b. Improving the quality and skills of IT staff that had been working in the company.

Table 2. DISHUBKOMINFO IS Strategy

Area Fungsional	Fungsi Bisnis	Proses Bisnis	Peranan SI TI yang Dapat Digunakan	
Bidang Komunikasi	Seksi Pos dan Telekomunikasi	Rekomendasi Perijinan	Office Automation SI Rekomendasi Perijinan	
		Pengkajian Bahan Kebijakan	Office Automation	
		Pelaksanaan Pengkajian Bahan Kebijakan	Office Automation, LPSE, SI Surat Elektronik, SMS Gateway	
		Koordinasi	SMS Gateway, SI Surat Elektronik OLAP, EIS, KMS	
		Fasilitasi	Office Automation SI Inventory	
		Pelaporan	Office Automation, LPSE OLAP, EIS, SI Inventory, SI Rekomendasi Perijinan	
		Evaluasi	Office Automation, SIPPDA OLAP, EIS, SI Pengaduan Masyarakat	
		Kerja sama	Office Automation, SI Surat Elektronik	
		Penyusunan Standar, Proses, Prosedur, Aturan	Office Automation	
		Monitoring	Office Automation, LPSE OLAP, EIS	
		Seksi Sandi	Pengkajian Bahan Kebijakan	Office Automation
			Pelaksanaan Pengkajian Bahan Kebijakan	Office Automation, LPSE, SI Surat Elektronik, SMS Gateway
			Koordinasi	SMS Gateway, SI Surat Elektronik OLAP, EIS, KMS
	Fasilitasi		Office Automation SI Inventory	
	Distribusi		Office Automation SI Inventory	
	Pelaporan		Office Automation, LPSE OLAP, EIS, SI Inventory, SI Rekomendasi Perijinan	
		Penyusunan Standar, Proses, Prosedur, Aturan	Office Automation	

3.2 Information Technology Strategic Planning at PT. Venturium System

(This journal is the *Journal of Computer Science* 9 (12): 1847-1855 ISSN 1549-3636, published in 2013. The journal is written by Lola Oktavia and Ford Lumban Gaol of the *Department of Master of Information Technology, Inktomi University, Jakarta, Indonesia*). PT. Venturium System Indonesia is an IT company, but the company is not applying information technology properly. Data Collection Methods of primary data and secondary data sources (references relating to research) in this journal that data collection is based on the literature study, observation and interviews. The method of analysis of internal and external business environment using SWOT analysis and *IT Balance Scorecard* and environmental analysis / IT conducted a comparative internal IT requirements, environmental analysis SI / external IT technology analysis that the current trend. The following is a discussion of the method of *Ward and Peppard* on the inputs:

a. SWOT Analysis (Internal Business Environment Analysis)

The results of a SWOT analysis showed that PT. Venturium System located in quadrant III, which means PT. Venturium System must change its strategy to deal with threats and challenges are greater.

b. IT Balanced Scorecard (Environmental Analysis Business External)

Results The weighting is carried out as follows:

- a. Perspectives Company (*Company Contribution Perspective*) both criteria.
- b. Customer Perspective (*User Orientation Perspective*) both criteria.
- c. Perspective Repair Operations (*Operation Imp. Perspective*) both criteria.
- d. Learning and Growth perspective (future orientation) both criteria.

c. Environmental analysis / IT internal and external

Environment of SI / TI conducted a comparative internal IT needs to support the vision and mission of the company. Environmental Analysis / IT externally conducted correlation with SI / IT is a trend days of kin. Then the mapping *Future Fortopolio Application* using *MC Farlan Grid*.

Table 3. Analysis Application Portfolio PT. Venturium System

<i>Strategic</i>	<i>High Potential</i>
	<i>SWIFT Application</i>
	<i>GTFrame</i>
	<i>GTMatch</i>
<i>Key Operational</i>	<i>Support</i>
<i>Abipro Application</i>	<i>Website Venesys.com</i>
	<i>Payroll Low</i>

Table 4. Results Mapping *Future Application Portfolio* PT. Venturium System

<i>Strategic</i>	<i>High Potential</i>		<i>I. E-report application</i>
	<i>E. SWIFT Application</i>		<i>J. Knowledge Management System</i>
	<i>F. GTFrame</i>		
	<i>G. GTMatch</i>	<i>Key Operational</i>	<i>Support</i>
	<i>H. Automatic File Transfer application</i>	<i>Abipro Application</i>	<i>K. Website Venesys.com</i>
			<i>L. Payroll</i>

The following is a discussion of the method of Ward and Peppard on the outputs:

a. IS / IT Business Strategy

Based on the evaluation of four perspectives using *IT Balanced Scorecard*, suggested solutions for PT. Venturium System in support of the achievement of the vision and mission of the organization is to implement a *Knowledge Management System, Automatic File Transfer Application*.

b. IS / IT management strategy

After evaluating four perspectives use, *Balanced Scorecard of IT* the results indicate that PT. Venturium System Indonesia needs to maintain and improve a few things related to the four perspectives. Companies need to improve the utilization of improving the quality of human resources (HR), IT security planning and knowledge and skills profile.

c. IT strategy

analysis technology trends of today is mobile application *e-report Application* and improve wireless internet users to facilitate PT. Venturium System Indonesia in accessing information and data.

3.3 IS / IT Plan in Determining Needs for the Printing Industry in PT. Offset Indrakilla Mojokerto

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PT. Offset Indrakilla has invested IT in business processes. But do not go well because the company is not planning at the time of IT investments and also did not pay attention to the actual needs of the company. Methodology The research conducted in this journal journal writer of data collection by interview, observation and *literature study* (literature). The analytical method internal business environment using the *SW (strength and weakness)*, the analysis of the external business environment using the *OT (opportunities and threats)*, environmental analysis / IT internal analyzes the condition of the existing infrastructure, environmental analysis / IT external observations and analysis current technology trends. The following are the results of the analysis method of Ward and Peppard on the inputs:

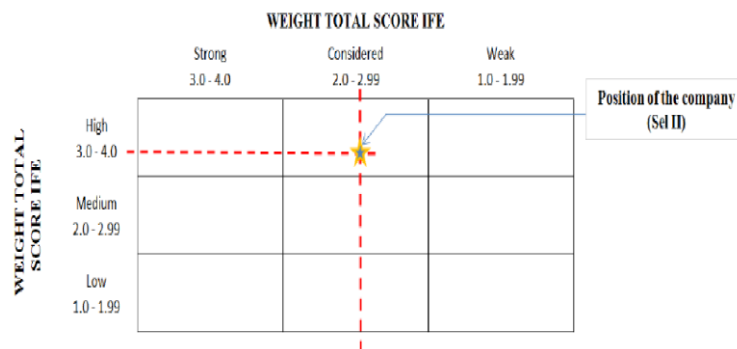


Figure 1. The First Results IE Matrix SWOT

Of the Image results *Matrix SWOT IE* above shows the position of PT. Indrakilla are in quadrant II, which means that companies are advised to develop intensive or *integrative* strategies.

a. Internal Business Environment Analysis (Method SW)

1. Strengths (power)

- a. Have done IT investment in the form of computer software to manage orders data, stocks, finance, design, and administration.
- b. PT. Indrakilla Offset has a production capacity of approximately 5000 pieces per hour.
- c. Has 6 Heidelberg offset printing machines one color and two color, 5 die-cutting machine, two cutting machines, and machines planography.

2. Weakness

- a. No IT devices in use today.
- b. Approximately 20% of employees are not productive (age above 50 years).
- c. Transportation costs are quite large and take considerable time when it should send a design, asked for approval of the design for the customer, and make the film, because the company must visit the customer to show the results of the design because there are no facilities ordered online at the company.
- d. Data and documents are managed manually so often wrong, damaged, or missing documents.

b. External Environment Analysis Business

1. Opportunities (opportunities)

PT. Indrakila Offset is the largest company and became the only company offset printing Mojokerto.

2. Threats (threats)

IT developments so quickly resulted in hardware and software behind.

c. Environmental Analysis / IT Internal

Infrastructure condition analysis results generated are as follows:

- a. The absence of division of IS / IT within the company's organizational structure.
- b. There is still a lack of investment in infrastructure, IT devices.

d. Environmental Analysis / IT External

Based on the analysis and observation is generated is as follows:

- a. Following the changing times so that all activities should include the SI and IT utilization.

The following is a discussion of the method of Ward and Peppard on the outputs:

1. IS / IT Business Strategy and IT Strategy

Building the organizational structure of IS / IT for today the company does not have the organizational structure of the IS / IT and human resources in the IT field. Then for the next, the construction of the IS / IT can use SDLC method starts from the Planning, Analysis, Design, Implementation and Maintenance.

2. IS / IT Strategic Management

In this section, earned three things, namely:

- b. For the strategic planning of IS / IT will be documented in the document "IS / IT Strategic Plan for the Printing Industry PT. Offset Indrakila Mojokerto ". For the analysis, will be documented in the "IS / IT Needs Analysis for Printing Industry PT. Offset Indrakila Mojokerto ". For design, will be documented in the "IS / IT Design for Industry Printing PT. Offset Indrakila Mojokerto ". Documents were created to maintain the consistency of the IS / IT and human resources / IT if a time SI / IT transferred to another person, then that person can determine the analysis and design so that if will undertake the development and improvement of the IS / IT at PT. Indrakila will not encounter any obstacles.
- c. For the development of the IS / IT at PT. Indrakila will be developed within a maximum of two years, including strategic planning for medium-term planning or long-term to allow for short-term planning in it.
- d. Regulation of the division of SI / IT, led by the head of the division and have a maximum of two staff.

3. IS / IT Strategic Planning

Road map composition based on the scale of priorities (weights). Strategy and weighs 3 (neutral) to 5 (very important) and very important and fundamental implementation is done in the first year (2015) and the rest is done in the second year (2016).

Table 5. Road Map

No	Planning	Year	
		2015	2016
1	Pengadaan infrastruktur TI		
2	Instalasi jaringan internet		
3	Membuat otomatisasi perkantoran		
4	Membuat email dan penyimpanan online		
5	Menciptakan aplikasi promosi dan penjualan		
6	Membuat aplikasi desain produk, pelayanan, dan proses		
7	Membuat aplikasi absensi, penggajian, evaluasi kerja, intensif, terminasi, dan keuntungan		
8	Membuat aplikasi untuk perekrutan tenaga kerja baru		
9	Membuat aplikasi penjadwalan		
10	Membuat aplikasi pengaturan kualitas, kontrol kualitas dan analisi		
11	Melakukan pengujian terhadap semua aplikasi dan infrastruktur		

4. Application Portfolio

In the portfolio application, an application can be categorized as strategic, high potential, key operation or support to support the company's business strategy. Below is a *future application portfolio* using *Mc Farlan Grid*.

Table 6 Future Application Portfolio at. Indrakilla Mojokerto Offset

<i>Strategic</i>	<i>High Potential</i>
<ul style="list-style-type: none"> - <i>Office Automation</i> - <i>Promotion and sales</i> - <i>Purchase</i> - <i>Accounting IS and Human resource IS</i> - <i>Forecasting, material requirement planning</i> - <i>Human resource IS (education and training)</i> - <i>Designing product, service and process</i> - <i>Managing quality, quality analysis and control</i> 	<ul style="list-style-type: none"> - <i>Programming application, database, and information resources information system.</i>
<i>Key Operational</i>	<i>Support</i>
<ul style="list-style-type: none"> - <i>Infrastructure management</i> - <i>Inventory management</i> - <i>Human resources IS (recruitment)</i> - <i>Scheduling (scheduling)</i> 	<ul style="list-style-type: none"> - <i>Documentation</i>

Table 7. Comparison of Three Journals

<i>IS/IT Management Strategy</i>	-	Peningkatan kualitas SDM dan keamanan IT	Integrasi SI/TI dan SOP
<i>IT Strategy</i>	SDM IT	<i>E-report Application</i>	Pembangunan Aplikasi SI/TI
<i>Future Application Portfolio</i>	<i>Mc Farlan Strategic Grid</i>	<i>Mc Farlan Strategic Grid</i>	<i>Mc Farlan Strategic Grid</i>

Metode Ward and Peppard	<i>The Usage of Ward and Peppard Method in IS/IT Strategic Plan Compilation in DISHUBKOMINFO East Lampung</i>	<i>Information Technology Strategic Planning at PT. Venturium System</i>	<i>IS/IT Plan in Determining Needs for Printing Industry in PT. Indrakilla Offset Mojokerto</i>
Lingkungan Bisnis Internal	SW	SWOT (kuadran III)	SW
Lingkungan Bisnis Eksternal	OT	<i>IT Balanced Scorecard</i>	OT
Lingkungan SI/TI Internal	SWOT (kuadran II) dan <i>IT Balanced Scorecard</i>	Komparasi Kebutuhan IT untuk mencapai visi dan misi perusahaan	Analisis Infrastruktur yang Ada
Lingkungan SI/TI Eksternal	SI/TI trend saat ini	SI/TI trend saat ini	SI/TI trend saat ini
<i>Business IS Strategy</i>	-	<i>Knowledge Management System dan Automatic File Transfer Application</i>	Struktur Organisasi SI/TI dan SDM bidang IT

4. Conclusions and Recommendations

4.1 Conclusion

Based on the three journals that are used by the reviewer of the journal that the use of information systems strategic planning and Peppard Ward method can be applied in three organizations: the DISHUBKOMINFO, PT. Offset Indrakilla Mojokerto and PT. Venturium System Indonesia but in each organization has a different result. Strategic planning in DISHUBKOMINFO information system using the method of Ward and Peppard analysis was based on the framework and solve them one by one (*step by step*) up until the *future application portfolio* but output is generated only limited to the IT / IS strategy. Information systems strategic planning of the institution PT. Venturium System Indonesia analysis was based on the framework and solve them one by one (*step by step*) to *future application portfolio* and *outputs* (business IS strategy, IS / IT management strategy and IT strategy). While at PT. Offset Indrakilla Mojokerto same as in PT. Venturium that the method of Ward and Peppard already solve them one by one (*step by step*) framework to arrive at a *future application portfolio*.

4.2 Suggestion

Reviewer journal expected that in the future will be built an information system strategy planning application method Peppard ward and to facilitate an organization / enterprise in the face of competition and to gain an edge in the competitive without having to do it manually.

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