

Information System Strategy Planning Using the Ward & Peppard Method in the Senior High School 57 Jakarta Barat

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Abstract:

Senior High School 57 is one of the high schools in West Jakarta. It was established in 1979 and is under the auspices of the government. Senior High School 57 only uses information systems and information technology as support for the organization's business. The existence of information systems and information technology that has not been integrated becomes an obstacle in improving organizational performance. The lack of careful planning for the development of information systems and information technology in detail is also important. IS / IT strategic planning is expected to help the development of IS / IT in Senior High School 57 can be done in a structured and well-organized according to the needs of IS / IT. The basic concept used in preparing the strategic planning framework for IS / IT at Senior High School 57 uses the concept of John Ward and Joe Peppard. Strategic analysis uses the PEST analysis method, Porter Five Forces Analysis, SWOT Analysis, Value Chain Analysis. The result of this research is to create an integrated IS / IT strategy planning framework so that it makes it easier for management to manage resources to produce the information needed, accurate, and can be shared by all parties. The results of the analysis can be used to develop an IS / IT strategy by developing a portfolio of applications in the future that can support business processes and in accordance with the business strategy of Senior High School 57 West Jakarta.

Keywords —IS/IT, planning, management strategic, ward peppard, swot analysis, value chain analysis, pest analysis.

I. INTRODUCTION

At the beginning of its formation, Senior High School 57 Jakarta was a long distance class from Senior High School 17 in 1979. Based on the Decree of the Minister of Education and Culture No. 0220/0/1981 on July 14, 1981, had established Senior High School 57 as a Public High School in West Jakarta, Kebon Jeruk District.

The development of technology is currently developing very rapidly and making information technology (IT) and information systems (SI) currently a necessity to win

increasingly fierce competition. It is also useful to support the improvement of service quality, decision making, and also business strategy planning in the future.

At present Senior High School 57 West Jakarta has not yet fully implemented an integrated information system. As for what has been implemented is only as a support / support section of administration, finance, libraries, and other infrastructure. Business activities carried out mostly using Microsoft office, such as Microsoft Word, Microsoft Excel, and various other supporting applications. For organizations or companies, a business strategy is not enough to face increasingly fierce competition. A good business strategy

must also be complemented by an optimal Information System and Information Technology strategy that is integrated with one another.

Its history begins in the early school year, in 1982/8383 Senior High School 57 has 6 classes, with a number of active classes or a number of 4 classes are used. The 1983/1984 class year, which was the second generation, began to apply afternoon / afternoon classes for class 1. In 1985 a class of 3 classes was constructed, with morning and evening systems. In the years 1988-1990 Senior High School 57 were rebuilt in total.

As one of the long established high schools, it is very important to have an IS / IT strategy that is integrated with the vision / mission of the company and also the government in educating the Indonesian people. The IS / IT strategic planning thinking that is often the benchmark at this time is by Ward and Peppard (2002), Turban (1999) and James Martin (1989). The IS / IT strategy planning contains methods that will be sorted systematically and support one another. This conceptualized IS / IT strategic planning concept will be used for the development of existing and ongoing IS / IT at Senior High School 57 West Jakarta and it is hoped that this proposal can help the development of information systems and business in the future. Research on IS / IT strategic planning at Senior High School 57 West Jakarta uses the Ward and Peppard method as a basis for building the organization's business framework.

Based on the above background problems can be found namely:

1. What is the current situation, condition and business competition faced by Senior High School 57 West Jakarta?
2. What are the conditions of external and internal IS / IT at Senior High School 57 West Jakarta?
3. How to plan an integrated IS / IT strategy to support the organization's vision / mission?

II. THEORY AND METHOD

This research will describe the theory used as a reference in analyzing the IS / IT strategies that are needed and are running on Senior High School 57 West Jakarta. This section will explain the relationship between business strategies, IS / IT strategies and also possible approaches for the creation of integrated Information Systems and Information Technology.

II.I. Definition of Information System

According to Laudon and Laudon (2010, p46) information systems are components that work together to collect, process, store and disseminate information to support decision making, coordination, control, problem analysis and visualization in an organization. The basic activities of Information Systems according to Laudon and Laudon are as follows:

1. **Input**, involves collecting raw data from within the organization or from the external environment for processing in an information system.

2. **Process**, involves the process of converting raw inputs into more meaningful forms.
3. **Output**, Transferring process information to people who will use it or to activities that will be used.
4. **Feedback**, Output returned to the appropriate member of the organization to then help evaluate or correct the input stage.

II.II. Definition of Information Technology

Haag and Keen (1996) define information technology as a set of tools that help you to work with information and perform tasks related to information processing. In this case, IT is considered a tool used for work related to information. The processing of information generated is processed using these tools. These tools are computers along with supporting software.

II.III. Strategic Planning

Strategic planning is a management tool used to manage current conditions to project future conditions, so the strategic plan is a guide that organizations can use from current conditions for them to work towards the next 5 to 10 years (Kerzner, 2001).

II.IV. Information System and Information Technology Strategy

According to Martin (1994), Strategic Information Systems are tools for implementing strategies using information, information processing and information communication.

An information system strategy must include business needs going forward to be more aligned with business strategies. It must also define and prioritize the investments needed to reach the application portfolio. (Issa - Salwee, Ahmed, Aloufi and Kabir, 2010).

The formulation of a good information system strategy will produce a picture of the main patterns of action and decisions chosen to realize organizational goals. Information system strategy has two components (Ward and Peppard, 2002, P44), viz:

1. IS Strategy (Demand-oriented)
The IS strategy was created to identify organizational needs for the systems and information needed to support the overall strategy of the business. The SI strategy bases itself on business, and at the same time pays attention to issues of competition and alignment of IS / IT with business.
2. IT Strategy (Supply-oriented)
IT strategies are made to define efforts to meet / support the organization's needs for systems and information by technology.

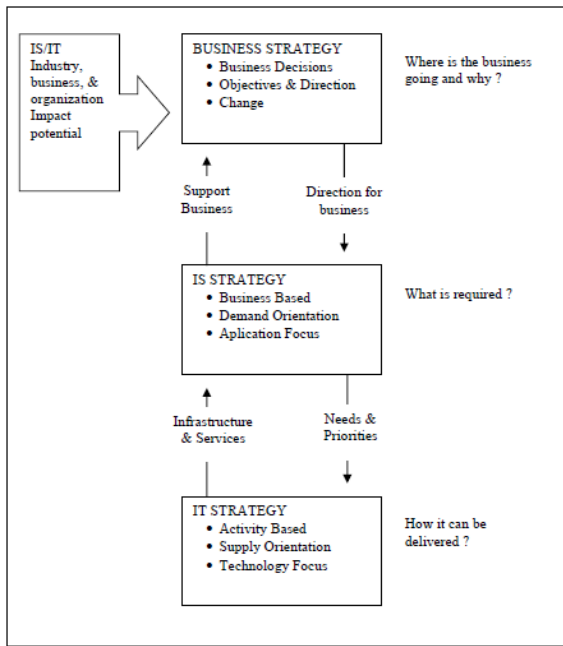


Fig 1. IS and IT Strategy (Ward and Peppard, 2002)

II.V. PEST Analysis (Politik, Economic, Social and Technology)

According to Ward and Peppard (2002, p70-72) PEST analysis is an analysis of business external environmental factors that include the political, economic, social, and technological fields. PEST is used to assess the market of a business unit or organizational unit. The PEST analysis direction is a framework for assessing a situation, assessing strategy or position, company direction, marketing plan or idea. Where this analysis can be taken a new opportunity or threat to the company.

II.VI. SWOT Analysis (Strength, Weakness, Opportunity, Threat)

According to Rangkuti (2006, p18-19), SWOT analysis (Strengths, Weakness, Opportunity, Threats) is used to assess the strengths and weaknesses of the resources owned by the organization / company and external opportunities and challenges faced with.

II.VII. Value Chain Analysis

Value chain analysis (value chain) proposed by Michael Porter (Ward and Peppard, 2002, p244). According to Porter, each company is a collection of activities carried out for production, marketing, shipping and product support. All of these activities can be represented by using a value chain.

II.VIII. McFarlan Analysis

The analysis of the internal environment of IS / IT recognizes the view of IS / IT towards the business at this time,

the company's experience in business, business scope and its contribution to the market, the company's capabilities, resources within the company and the technology infrastructure used. Current portfolio applications of running systems and systems under development (Ward and Peppard, 2002, p153).

III. METHODS

Based on the background and theoretical basis that has been formulated above, then formed a pattern that will be used in this study. This pattern will later become a framework for the conduct of this research, explaining the methods and tools used in the steps of this study.

Basically, this research has taken various stages, namely: Literature review (previous research and theories that support), interviews or interviews with sources, data analysis, determining the direction of the organization's business, determining IT resources and Potential Information System Applications, Determination of strategy management information systems and information technology, as well as conclusions and suggestions for organizations.

The data that will be used in this study is the qualitative method and interviews. Interviews were conducted with stakeholders, such as the principal as the leader of the organization, the deputy head of the school, the head of administration, staff related to the information system, teachers, at the Senior High School 57 West Jakarta school in order to dig deeper into matters that support the planning of the SI strategy / IT currently and in the future.

IV. ANALYSIS

IV.I. PEST Analysis

According to Ward and Peppard (2002, p70-72) PEST analysis is an analysis of business external environmental factors that include the fields of politics, economics, social and technology. PEST is used to assess the market of a business unit or organizational unit. The PEST analysis direction is a framework for assessing a situation, assessing strategy or position, company direction, marketing plan or idea. Where this analysis can be taken a new opportunity or threat to the company or organization.

Table 1 PEST Analysis Senior High School 57 Jakarta

Political	Economic	Social	Technology
<ul style="list-style-type: none"> UU Sistem Pendidikan Nasional No. 20 tahun 2003 bahwa sistem 	<ul style="list-style-type: none"> Laju perkembangan perekonomian di lingkungan sekitar SMA Negeri 57 Jakarta mengalami perbaikan 	<ul style="list-style-type: none"> Tidak ada sekolah saingan di sekitar SMA Negeri 57 Jakarta. Pola pikir masyarakat dan jaminan kerja pada SMA Negeri semakin 	<ul style="list-style-type: none"> Teknologi internet yang semakin mudah didapat Teknologi mobile yang juga semakin mudah didapat dan murah Penerapan ICT

peningkatan mutu serta relevansi dan efisiensi yang berstandar nasional.	yang menjadikan minat masyarakat cukup tinggi untuk mendaftar di SMA Negeri 57 Jakarta. • Adanya dana bantuan dari pemerintah Provinsi dan program-program Dana Sekolah membantu para siswa-siswi di SMAN 57 Jakarta.	menurun. • Daya Referensi masuk perguruan tinggi • Lingkungan SMA Negeri 57 yang berada di dalam perkampungan membuat minat calon siswa berkurang	di lingkungan SMA Negeri 57 cukup mumpuni
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IV.II. SWOT Analysis

Identification of internal factors of Senior High School 57 West Jakarta using SWOT consists of Strength and Weakness as well as external factors from Senior High School 57 consisting of Opportunity and Threat in order to see the potential of the organization and future strategic opportunities.

The strength of Senior High School 57 West Jakarta is in terms of curriculum that is already accredited directly from the Ministry of Education and Culture (Ministry of Education and Culture of the Republic of Indonesia), Teachers, and adequate facilities. Then the threat faced by Senior High School 57 is competition with neighboring schools that have national standards to international standards.

Below is a SWOT Analysis table about information systems and information technology that is in Senior High School 57.

Table 2 SWOT Analysis of Senior High School 57 Jakarta

Strength	Weakness
Portfolio SMAN 57 yang telah berdiri lebih dari 20 tahun dan memegang peranan sebagai SMAN pertama di DKI Jakarta yang menerapkan IS/IT untuk kegiatan pembelajaran. Kurikulum yang terakreditasi nasional	Pemanfaatan IS/IT yang belum terintegrasi satu dengan yang lainnya.
Opportunity	Threats
Perkembangan teknologi yang semakin berkembang berguna sebagai media promosi dan pembelajaran	SMA & SMK yang berada di lingkungan sekitar

kedepannya. Dukungan/Support dari pemerintah terkait SI/TI yang digunakan di SMAN 57	Kebijakan pemerintah selalu berubah.
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IV.III. Value Chain Analysis

Value Chain Analysis of a company achieves competitive advantage by creating a Value Chain that consists of main activities and supporting activities that contribute to margins. Competitive advantage can be realized in terms of getting strategic, tactical, and operational advantages. Information systems strategic planning can be used to change the direction of a company in getting its strategic advantages. (McLeod and P. Schell, 2007).

Table 3 Value Chain Analysis of Senior High School 57 Jakarta

Aktifitas Pendukung	Administrasi Keuangan dan Perencanaan				
	Administrasi Kepegawaian (Staf, dan Guru)				
	Pengembangan Sarana dan prasarana Teknologi				
	Pengadaan				
Aktifitas Utama	Logistik Masuk	Operasional	Logistik Keluar	Penjualan dan Pemasaran	Jasa
	Kegiatan Penerimaan Siswa Baru	Kegiatan Kurikulum	Kegiatan Kelulusan Siswa	Sosialisasi dan Kerjasama	Alumni

IV.IV. Porter Five Forces Analysis

Analysis of Senior High School 57 Jakarta can use Porter Five Forces. This model is used to analyze the condition of a company as seen from the competition between companies, the bargaining power of suppliers, the threat of new entrants and also the threat of substitute or substitute products.

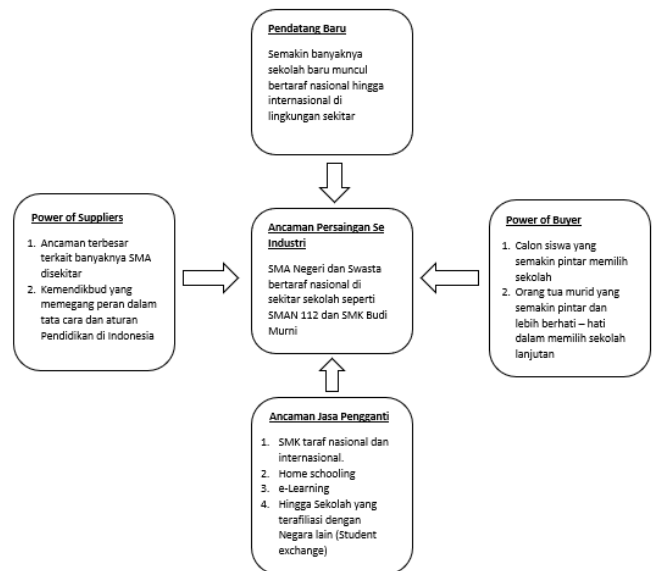


Fig 2. Porter Five Forces Analysis of Senior High School 57 Jakarta

Anggaran dari PEMPROV)	
• Inventory SI MASTER	
• Jaringan & Internet	

IV.V. IS/IT Infrastructure Analysis

1. Hardware
The hardware used by Senior High School 57 today is a PC that is assembled with a minimum of 4 Gigabytes of RAM and an Intel Core i3 processor that is divided into 3 multipurpose LABs as well as an administration room and a public relations room. The other hardware is in each classroom that has used a projector LCD to support learning activities.
2. Software
The software used at Senior High School 57 is free or open source software that is further developed into a system, such as SLIM SENAYAN (library information system application); PKB (Continuing professional development), PKP (Potential Learning Activities), for Teacher accreditation applications. As well as Microsoft Office applications.
3. Networking
The network infrastructure used by Senior High School 57 is using 3 internet providers, 100 mbps indihome, 60 mbps optical FIBER cable, multipurpose lab space that has also used a LAN network, and there are 3 hotspot distribution points in the school environment.

IV.VI. Current IS / IT Portfolios

Based on the results of research and case studies that have been carried out related to information systems and information technology at Senior High School 57 West Jakarta, currently can be grouped in the McFarlan Grid mapping table. Existing applications are arranged and grouped into several groups, namely, strategic, high potential, key operational, and support.

Table 4 Current IS/IT Portfolios of Senior High School 57

Strategic	High Potential
• DAPODIK (Data Pokok Pendidikan), Database sekolah	
Key Operational	Support
• Sistem Absensi Guru • Aplikasi si Pintar (e-Learning) untuk perencanaan pembelajaran dari PEMPROV • Sistem informasi keuangan • SLIM SENAYAN (Aplikasi Perpustakaan) • UNBK • e-Raport • e-RKAS (Perencanaan	• Web sekolah • Ms Office Application

Based on the application used by Senior High School 57 Jakarta, the details of these applications are mapped into a McFarlan Strategic Grid analysis table, then the upcoming portfolio of information systems is formed with the application needs and information systems needed by Senior High School 57 Jakarta.

IV.VII. Suggested IS / IT Portfolios

Future information system portfolios will be formed in accordance with application requirements and information systems needed by Senior High School 57 West Jakarta. From this portfolio it can be seen and made priorities and future investments related to these needs.

Table 5 Suggested IS/IT Portfolios of Senior High School 57 Jakarta

Strategic	Potential
1.Sistem Informasi Manajemen Pendidikan (SIMP) 2.SiPintar E-Learning	1.Sistem Informasi Uji Kompetensi Guru (SI-UKG) 2.Sistem Informasi Pengarsipan 3.Sistem Informasi Kerjasama eksternal dan Internal Sekolah 4.Sistem Informasi Penjangkaran Alumni SMA Negeri 57 Jakarta 5.WEB Parents
1.Data Pokok Pendidikan (Dapodik) 2.E-Raport 3.SlimS (Perpustakaan) 4.E-RKAS 5.Sistem Informasi Akutansi Keuangan 6.Sistem Informasi Kepegawaian 7.Sistem Informasi Inventory 8.Jaringan dan Internet	1.Web Sekolah 2.Ms. Office Application
Operational	Support

IV.VIII. IS/IT Strategy and IS/IT Management Strategy

The following are the results of the IS / IT strategy planning for the research i have done at Senior High School 57 as follows:

1. Information System Strategy
The information system strategy that is carried out includes how each unit and lab can utilize information systems that support work and are integrated. Cost and benefit analysis is needed in order to get a definite result of an information system developed by the government or by Senior High School 57 itself.
2. Information Technology Strategy
The information technology strategy includes hardware procurement information technology infrastructure that supports desktop and mobile applications

3. IS/IT Management Strategy

The IS / IT management strategy includes the managerial functions of information systems and information technology. Recruitment of supporting IT staff, training of teachers, students, and training of IT professionals to develop information systems and information technology. Designing project timelines and oversight of the implementation of information systems at Senior High School 57. Perform maintenance and evaluation of ongoing systems that will be carried out.

V. CONCLUSIONS

Based on the results of the analysis and research conducted at Senior High School 57 West Jakarta, the following conclusions can be drawn:

1. PEST and SWOT analysis used to see the potential of Senior High School 57 today.
2. Based on the analysis of the current system that does not yet have an integrated and mutually supportive Information Technology and Information System. New applications need to be developed that can be integrated with existing applications to support business.
3. Mapping the existing application is very important and becomes the basis for the complex planning of information systems going forward.
4. In general, the existing network infrastructure is sufficient to support activities, but it still needs to be improved to support a portfolio of IS / IT that uses the optimal and optimal level of security.

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