

Strategic Planning of Information System/Information Technology (Case Study: Gresik Regency Government Environment)

Muhammad Anwar Aini¹ and Erma Suryani¹

Abstract—Using IS (Information System)/IT (Information technology) has become the organization's need to carry out its operational activities and services. The government has also used IS/IT in carrying out its activities and services considering the benefits that are get, efficient, effective, and transparency to support good and clean governance. Gresik Regency does not yet have a master plan for implementing IS/IT so that what it needs cannot be managed. Gresik Regency needs a planned information technology-based system that can produce correct and prompt information. purpose of this study was to identify data and information needs in policy formulation and to develop an information system strategic plan in Gresik Regency. Basic concept used in compiling this research is the method proposed by John Ward and Joe Peppard. stages carried out start from analyzing the internal and external business environment of the organization, analyzing internal and external organization IS/IT, followed by identifying strategies and designing future portfolios. Method of analysis carried out uses several methods, among others, SWOT, Critical Success Factors, Value Chain, PEST, and McFarlan Strategic Grid. The results of this study is a blueprint of strategic planning that refers to the organization's business plan based on data obtained through the analytical methods used. It will integrate the information produced for administrative and public service needs. organization's strategic objectives in the form of superior prime service will be achieved by implementing an optimal improvement of data processing functions with the support of Information Technology. preparation of IS / IT strategic planning according to the resulting portfolio is expecting to be using in future strategic planning so it can give priority to the activities needed to get optimal results and based on its contribution to the objectives to be achieving.

Keywords—Information System Strategic Plan, Ward & Peppard Framework, SWOT, CSF, Value Chain, McFarlan Matrix.

I. INTRODUCTION

The increasing use of information technology in developed countries is now being used by the government as a public information system. Gresik Regency is one regency in East Java Province that has implemented starting to implement technology in every aspect of its government. In 2017, they chose Gresik Regency to be one

of 24 regencies in Indonesia that supported the Movement Towards 100 Smart Cities. It relates this movement to preparing a smart city development master plan that contains various programs in the region by optimizing the use of technology. for that the role of the Communication and Information Office of Gresik Regency has a vital role in implementing the Vision and Mission of Gresik Regency in the IT field and in its achievement towards Gresik smart city.

Every organization must identify information needs and carry out an analysis of the mission and functions performed, who does it, data and supporting information needed to perform the various functions and processes needed to structure the most useful information [1].

In the government environment, Information Systems are better known as E-Government (Electronic Government). e-government is the use of information technology to support government operations by providing benefits to the community and providing services or services. The need to create an Information System strategic planing for Gresik Regency now is to support the performance and service of this Regency [2].

According to [3] application of IS in an organization has three main objectives. Improving work efficiency by automating various processes that manage information

1. What is the information system that has been running in Gresik Regency?
2. What are the constraints in implementing information systems in the Gresik Regency government environment?
3. How is the Draft Information System Strategic Plan that will apply to Gresik Regency?

The importance of an organization that uses the Information System Strategic Plan (Renstra SI) now will determine the success of the Information System [4].

Based on the phenomena described earlier, the researchers felt interested in researching Strategic Planning Information systems and information technology in Gresik Regency to improve the quality of public services. In this study, I expect it that information systems strategy planning can be got that is effective so it can improve the quality of information systems in Gresik Regency.

The focus of the research in preparing this Information System strategic plan is:

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1. The discussion is more 'focused' on preparing the Information System Strategic Plan for Gresik Regency.
2. Discussion of Strategic Plans Information systems are 'focused' on public information services in Gresik Regency.
3. The unit to be observed is the Gresik Regency Government environment.

II. LITERATUR REVIEW

A. Strategic Management

Strategic management is the art and science of preparing, implementing, and testing decisions; strategic management focuses on the strategy process.

According to [3] Strategy is a collection of actions that are incorporated that are aimed at increasing the long-term strength of the company associated with its competitors. Strategy can create a new policy that can be used in practice, such as redesigning production processes in business.

According to [5] information systems are a link between humans, procedures and the use of a technology to collect, process, store, disseminate and present information used by one or several business processes in the organization.

Information and Communication Technology is now a part that is not released in various fields of life, including in government, those related to services. Time limitations do not become obstacles to run managing services to the community.

B. Strategy

According to [3] Strategy is a collection of actions that are incorporated that are aimed at increasing the long-term strength of the company associated with its competitors. Strategy can create a new policy that can be used in practice, such as redesigning production processes in business.

C. Information System Strategy

According to [3] Information system strategy is a strategy that defines the organization's needs or requests for information and systems that support the overall business strategy of the organization..

D. Business Strategy

The term business strategy relates to management plans for a single business, not for diversified businesses. They say a business strategy to have the power to generate and maintain competitive advantage. a business strategy is said to be 'weak' if it produces a competitive advantage [6]. Business strategy is a set of integrated actions that aim to achieve long-term goals and corporate strength to face competition.

E. Information System Component

The Physical Component of the Information System includes four aspects including:

1. *Humanware*: managerial implementers, data entry operators, computer operators, Programmers, system analysts, database administrators, and so on.
 2. *Organiware*: formal policies and instructions for operating the system. Comprising management, data processing procedures, and user guidelines.
 3. *Technoware*: hardware, software, supporting devices such as networks.
 4. *Computers*: communication systems, and so on.
 5. *Infoware*: Database, information produced and needed in a process.
- F. *Relationship Between Business Strategy, Information System Strategy, Information Technology Strategy*

In creating a strategic application, it should not only focus on analysis of technology. An effective way to generate profits from IS / IT is to concentrate on business thinking, that is by analyzing existing business problems and changing environments, realizing that IS / IT is only one form of a solution offered, because he found that IS / IT strategies when this identifies technology issues and technical terminology more, but little identifies organizational needs for applications and business needs.

The SI strategy focuses on identifying the company's needs for IS and IT strategies focusing on identifying the company's needs for IT and infrastructure [3]. We can see the relationship between the three through the following picture:

Implement policies and a plan for achieving organizational goals.

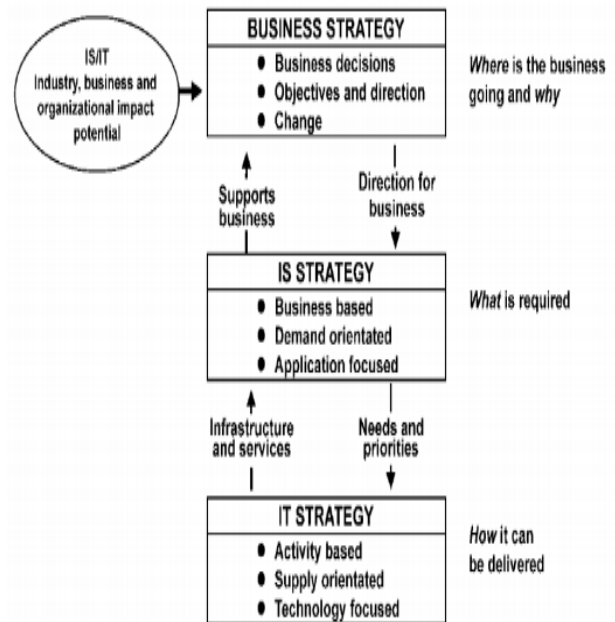


Figure 1. Relationship between Business Strategy, SI Strategy and IT Strategy [3].

G. Relationship between Business Strategy, SI Strategy and IT Strategy (Ward and Peppard, 2002) Information Systems/Information Technology Strategy Plans

Strategic Planning IS/IT in a company that focuses on the vision outline of the essence of the need for information and systems that will be supported by the technology in a company is more to "IT Supply" [3].

According to [3], the application of SI in an organization has three main objectives:

1. Improve work efficiency by automating various processes that manage information.
2. Increasing the effectiveness of management by satisfying the needs of information for decision making.
3. Improve competitiveness or increase the competitive advantage of the organization by changing the style and way of doing business.

Information Systems and Information Technology Strategy Planning Models. In the design of Strategic Planning, IS/IT needs a framework that becomes a reference so that the expected results are under needs, directed and on target., p40. We can see the relationship between the three through the following picture:

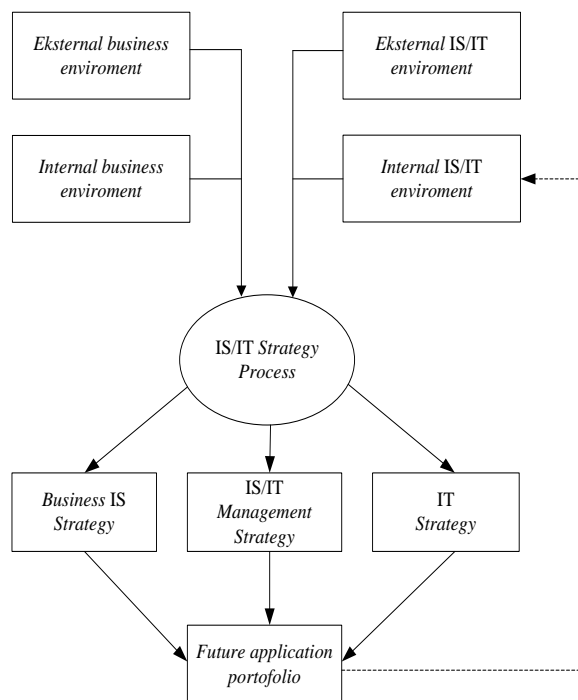


Figure 2. Model Framework Perencanaan Strategi SI/IT [3].

We can see a model framework of system strategic planning and technology in the picture above, in this framework there are important parts in preparing the IS / IT Strategic Plan [3]:

- a. Inputs, as an input in system strategic planning and information technology, comprise:
1. The Internal Business environment. Is a business strategy used in the present goals, resources, processes,

and organizational culture and the value of the business itself.

2. The External Business environment. Is The political, economic, social, technological and competitive climate in which the company operates.
 3. The Internal IS/IT environment The current IS/IT view of business, the company's experience in business, the business, and its contribution to the market, the ability of the company, the resources in the company and the technological infrastructure used. I have planned the current portfolio application of the system running and the system that is under development or has not been developed but for the company.
 4. The external IS/IT environment Technological developments and opportunities exist, and IS/IT used by other parties, consumers, competitors and suppliers.
- b. IS / IT Strategy Process, the process by which we obtain information, and the results of analysis got from inputs, will be processed to produce outputs.
- c. Outputs, result from a process that includes;
1. Business IS Strategy, How each unit can use IS / IT in achieving its business objectives. Includes an application portfolio that will be developed for each unit and business model. Describe the information architecture of each unit.
 2. IT Strategy, strategies and policies applied to regulate the use of technology in the company and manage the resources of expert technicians.
 3. IS / IT Management Strategy, a common element of the strategy that will apply to the organization ensuring consistency of policies based on needs.
 - d. Future Application Portfolio, Details that explain the proposed application to be used by the company, to integrate each unit of the company and adjust it technological developments with the development of the company.
 - e. Current Application Portfolios , Details regarding the application of information systems applied by the company today, by looking at the advantages and strengths got by using the application and looking at the existing application support for operational activities and planning of system strategies and information technology for companies to face competition and markets at the present time.

H. Analysis of the Organization's Internal Environment

It uses the internal business environment analysis of a company to find out the company's current business strategy, mission, and company vision, company business activities and processes, resources owned and information needed by the company. The analytical techniques used in understanding the situation conditions in the internal business environment include:

1. SWOT Analysis, According to [7] SWOT Analysis is the identification of various factors to plan a company's strategy. It bases this analysis on logic that can maximize

strengths and opportunities but can minimize weaknesses and threats. Strategic decision-making processes are always related to the development of the company's mission, goals, strategies and policies.

2. Critical Success Factor (CSF) analysis, according to [3] a critical success factor (CSF) analysis is a limited area in a business which if fulfilled will guarantee the success of competitive performance for the company.
3. Value Chain Analysis, we do Value Chain Analysis to map all work processes that occur in the organization into two categories, the main activities and supporting activities. This analysis will refer to organizational documents that state the duties and functions of each work unit.

I. Analysis of The Organization's External Environment

Analysis of the business external environment of a company comprises factors outside and detached from the company. The main factors that are considered are Political, Economic, Social and Technology (PEST) factors. The external environment of this business can provide a great opportunity for the company to progress, while it can become a barrier and a threat to progress.

J. Analysis of The Organizational Internal IS/IT Organization

According to [3] internal IS / IT environment analysis comprises testing the current portfolio of applications and applications that are being built to determine the content, scope and contribution, the same evaluation of existing information resources, evaluation of existing infrastructure and services information technology and resources through a technology approach. The following tools used in the internal analysis environment are:

1. McFarlan Application Portfolio Analysis.
2. Organizational SI/IT Assets

K. Analysis of The Organizational Eksternal SI/IT Organization

External IS/IT it carries environmental analysis out through an analysis of the growing trend of Systems and Information Technology that is used today.

III. METHOD

A. Research Approach Perspective

To know and describe the actual situation and in fact by looking at the problem and purpose of the study as stated in the introduction, the research must match the chosen research approach. In a study, we need regular investigation to find out how research steps should be done using a research method.

The research method used in this study is a qualitative research method. Qualitative research according to [8] is: Qualitative research is research that intends to understand the phenomenon of what is experienced by the subject of research such as behavior, perception, motivation, action,

and with description in the form of words and language, in a special natural context and by using various scientific methods.

This qualitative descriptive research was chosen because in this study it should obtain information about the state of the information system in the Gresik Regency government environment in more depth and develop all the main tasks related to information systems. In addition, we expect a qualitative approach to reveal the situation and problems faced in future SI development activities.

B. Research Sites

The research location is a place or region where the research will be conducted. It locates the research location in the Gresik Regency Government Environment, especially various services which are the point of developing information technology in Gresik Regency.

C. Research Parameters

The parameters used in the strategic information system planning research of Gresik Regency Government Environment is a component of an information system comprising

1. *Infoware*, the SI Architecture which comprises Data Architecture and DBMS.
2. *Technoware*, the SI Architecture which comprises Application, Server, Storage and Network Architecture.
3. *Organiware*, the Organizational Architecture comprising the SI Architecture Procedure and SI Organizational Structure.
4. *Humanware*, the HR Architecture comprising the Total Architecture and HR Competence.

D. Data Collection Technique

Data collection is an attempt to collect a number of field data needed to answer research questions. The several data collection techniques used in the study include:

1. Interview.
2. Observation.
3. Documentation.
4. Literature Study

E. Data Collection Procedure

In this Information System strategic plan research, the procedures for collecting data are:

1. Observation of Internal and External Environmental Conditions.
2. Document Assessment.
3. Business Context Interviews.
4. SI Need Interview in each part that develops Information Systems in the Gresik Regency Government Environment.

F. Data Analysis Technique

The research method used in this study is qualitative descriptive research, where this study produces descriptive data that is carried out in the form of a description of the

results of interviews and observation and study documentation. The following are data analysis techniques used:

1. Data reduction.
2. Presentation of data.
3. Conclusion / data verification

According to [3] internal / IT environment analysis comprises testing the current portfolio of applications and applications that are being built to determine the content, scope and contribution, the same evaluation of existing information resources, evaluation of existing infrastructure and services information technology and resources through a technology approach. The following tools used in the internal analysis environment are:

1. McFarlan Application Portfolio Analysis (Application Portfolio).
2. Organizational SI/IT Assets

G. Organizational SI/IT External Environmental Analysis

External IS/IT it carries environmental analysis out through an analysis of the growing trend of Systems and Information Technology that is used today.

H. Steps in SI Strategic Planning within the Gresik Regency Government

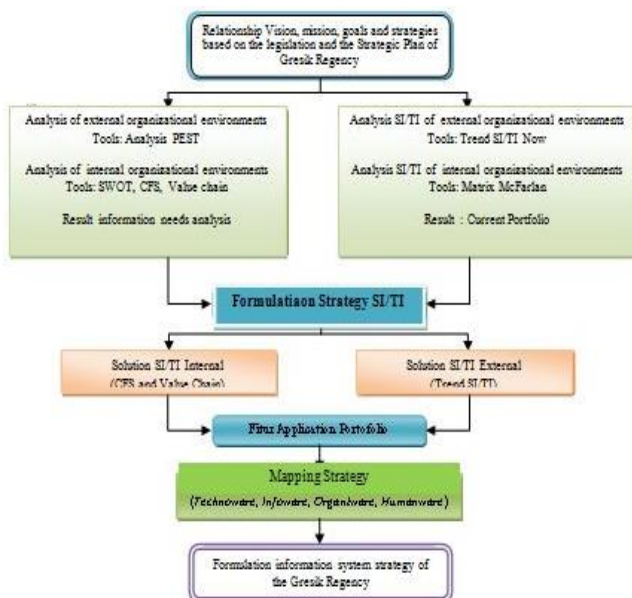


Figure 3. Steps in SI Strategic Planning within the Gresik Regency Government

I. External Environmental Analysis PEST The environment of the Gresik Regency Government

We can identify the external environment of the organization through PEST analysis (Politics, Economy, Social and Technology). We will later use the results of this external environment analysis identify in the SWOT analysis.

1) Political Aspects

- a. Support potential and quality human resources

- b. Support adequate facilities and infrastructure
- c. The commitment of the regional government to increase the capacity of the apparatus resources.
- d. Motivation and seriousness of employees to create good governance.
- e. Central government policies and regulations that support regional development planning.
- f. Availability of planning documents as a reference for policy making.
- g. Central government policies and regulations that support regional development planning.
- h. Transportation development planning Communication and systems Information is not optimal.
- i. The pattern of human resource utilization has not been maximized.
- j. The pattern of development approaches is still charitable (mercy)

2) Economic aspects

- a. The amount of investment potential.
- b. Development of regional and national export export networks.
- c. The development of the marine transportation industry.
- d. The development of regional production.
- e. National and regional development programs.
- f. The economic access of the people in the villages is hampered.
- g. Competition for regional production with other regions.

3) Social Aspects

- a. Inter-regional interaction.
- b. Great community support.
- c. The conditions and conditions of the region are conducive.
- d. The lack of integration of programs across SKPD.
- e. There is still a development disparity between cities and villages.
- f. Disasters.
- g. Climate (west wind, east wind).
- h. Topographic conditions.
- i. Stakeholder appreciation for the high planning of communication and informatics transportation.

4) Technology Aspects

- a. The functions and roles of transportation and information communication are dominant.
- b. The existence of the Gresik Regency Radio Network.
- c. An Internet network that has not been able to access all needs in all areas of the Gresik Regency administration.

J. Internal Environmental Analysis of Gresik Regency

Internal Environment Analysis Organizations are one of the important stages in the organization's IS/IT strategic planning. From this internal analysis, we will identify the strengths and weaknesses of the organization. In the organization's analysis's internal environment using tools: Critical Success Factors, Value Chains and SWOT. The result is that it will produce an information need.

K. External IS/External IT Analysis

Environmental Analysis of IS/IT External We carry it out to get an overview of trends in information and communication technology, applications, server hardware, and computer networks. Input from this process is some information from search results through various media.

L. Internal SI/IT Environmental Analysis

This analysis aims to get an overview of the information system at the Gresik Regency

M. SI/IT Solutions Based on External Analysis

In getting Information System solutions based on the analysis of the external environment SI/IT got Solutions based on Technology Trend are:

1. Service Information of Everything.
2. Internet of Things Architecture & Platform

While solutions based on application trend analysis are:

1. Data warehouse.
2. Decision Support System (DSS).
3. Geographic Information System (GIS).
4. Web Based Application

IV. RESULTS AND DISCUSSION

A. Future Application Portfolio

Based on the formulation of the IS/IT strategy plan in the Gresik Regency Government then produces an internal solution based on CSF and Value Chain analysis and results from external solutions based on IS/IT trend analysis, then the identified SI is mapped based on its contribution to the achievement of Gresik Regency strategy using Matrix McFarlan:

Strategic	High Potential
<ul style="list-style-type: none"> • Website Dinas • SI Aplikasi Digital Signage • SI Kerjasama Kominfo • SI Asset 	<ul style="list-style-type: none"> • SI Pasar kerja • SI Uji Keterampilan Kerja Disnaker • GIS Penyebaran Tower Komunikasi • SIMonev Layanan Publik • SI Dr. Kepo Dispenduk • Data Warehouse • DSS • SI SIAK Dispenduk • SI Aplikasi e-Planning • SI Aplikasi e- Purchasing
Key Operational	Support
<ul style="list-style-type: none"> • SIMPEG • SI Inventory • SI persandian Data Diskominfo • SI Sistem keuangan Kominfo • SIMonev Kontrak kerja DPU • SIMonev Hub Kominfo 	<ul style="list-style-type: none"> • Ebook SOP • SI Aplikasi Buku Tamu Dispenduk • SI Arsip • SMS Gateway • SI perjalanan Dinas Diskominfo • SI Kearsipan

Figure 4. Mapping IS/IT Gresik Regency Government

B. Mapping the Strategic Plan of Gresik Regency

The mapping of the SI strategic plan that was built is a description of the vision, mission, strategy of Kabupaten Gresik and the needs of SI, developed in daily activities for each agency and parts that carry out development in information technology, to facilitate reading all information on SI development based on vision , the mission and strategy of Gresik Regency

We group the SI strategy map made in this study based on four SI components, including infoware, technoware, organiware, and humanware strategy maps. The following is a mapping based on these four aspects

1) Map of the Infoware Strategic Plan for the Gresik Regency Government

The infoware strategy mapping in this study was planned based on the internal needs of each Information System Developer Service in Gresik Regency, so that the description of SI needs was seen more and in more detail, the use and application of SI could be carried out.

Department Communication and Information Gresik	
Information Systems	
<ul style="list-style-type: none"> • Data Warehouse • DSS • Ebook SOP • GIS Penyebaran Tower Telekomunika • SI Kerjasama Hubkominfo • SI Keuangan Hubkominfo • SI MONEV Hubkominfo 	<ul style="list-style-type: none"> • Website Dinas • SI Persandian Data • SI Program Hubkominfo • SIMPEG • SMS Gateway • SI Perencanaan Hubkominfo • SI Perjalanan Dinas • SI Program Hubkominfo

Figure 5. Infowarecommunication and information offices Gresik

Labor offices Gresik	
Information Systems	
<ul style="list-style-type: none"> • Aplikasi Buku Tamu, Data Warehouse • DSS • Ebook SOP • Email • SI Aplikasi Digital Signage • SI Arsip • SI Pasar Kerja 	<ul style="list-style-type: none"> • SI Pelatihan Kerja • SI MONEV Pelatihan Kerja • SI Uji Keterampilan Kerja • SI Inventory • SIMPEG • SMS Gateway • Website Dinas Tenaga Kerja

Figure 6. InfowareLabor offices Gresik

Department of Population and Civil Registration Gresik	
Information Systems	
<ul style="list-style-type: none"> • Data Warehouse • DSS • Ebook SOP • SI SIAK • SI Aplikasi Digital Signage • SMS Gateway • Email Dinas 	<ul style="list-style-type: none"> • SI MONEV Layanan Publik • SI Saran dan keluhan • SI Dr. KEPO • SI Arsip • SI Aplikasi Buku Tamu

Figure 7. InfowareDepartment of Population and Civil Registration Gresik

Public Works Department	
Information Systems	
<ul style="list-style-type: none"> Data Warehouse DSS Ebook SOP SI Go-Plong SI Aplikasi Digital Signage 	<ul style="list-style-type: none"> SI MONEV Kontrak Kerja SI APALAN SMS Gateway SI e-Planning SI e-Purchasing

Figure 8. Infoware Public Works DepartmentGresik

DPPKAD Kab. Gresik	
Sistem Informasi	
<ul style="list-style-type: none"> Data Warehouse DSS SIMKEU SI Perijinan SIPPADU SI SISKEUDes SI Aset 	<ul style="list-style-type: none"> SI Aplikasi Digital Signage SMS Gateway SI Sasaran Kinerja Pegawai

Figure 9. Infoware DPPKAD Department Gresik

2) *Map of the Environmental Technoware Strategic Plan of the Gresik Regency Government*

On the Technoware Strategic Plan Map, the Gresik Regency Government Environment has proposed network infrastructure development and proposed Hardware and Software.

The following is the proposal of the Gresik Regency Government Network Infrastructure Development, Recommended network infrastructure recommendations:

1. V-SAT is replaced with Optical Fiber from Telkom.
2. Must be connected to each other between Department and SKPD even to the village level.
3. Procurement of new servers for data flow.
4. Distributed addition and distribution of bewitches.

Following are the Proposals for Hardware and Software Development in the Gresik Regency Government Environment:

Proposed SI / IT	Software Requirements	Hardware Requirements
Data Warehouse	<ul style="list-style-type: none"> Microsoft Windows Server 2008 MySql PHP 5.0 	1 unit server IBM X3100-M4, 1 TB HDD, Proc : Xeon 4C E3-1220v 2.3.1 GHz, 4 GB Ram.
All Hubkominfo SI Applications	<ul style="list-style-type: none"> Microsoft Windows Server 2008 MySql PHP 5.0 	
Information Services	<i>Digital Signage</i>	20 unit monitor LG 50 inch, Proc: i3, Ram 8 GB, HDD 1 TB,
Speedy / Indihome Internet Service		Fiber Optic Cable

Figure 10. Technoware Needs in Gresik Regency Environment

3) *Map of Organiware Strategic Plans in the Gresik Regency Government Environment*

We propose the following organizational structure (organiware) for SI/IT solutions in the Gresik Regency Government Environment, as shown in the following figure:

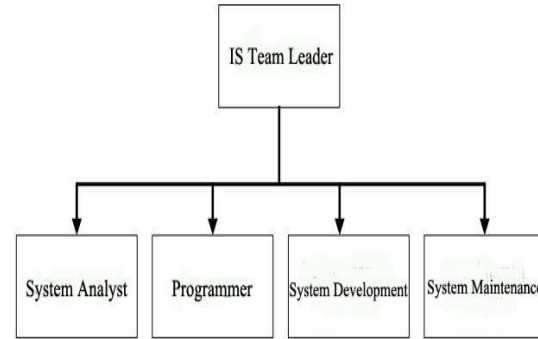


Figure 11. Proposed Organiware Structure in the Gresik Regency Government Environment

4) *Strategic Map of Humanware in the Gresik Regency Government Environment*

The proposed IS/IT strategy planning will run well if it is supported by the strategic planning of SI/IT Human Resources under the SI/IT solutions that are made. Implementing new SI/IT should be supported by human resources in IT who are competent in their fields.

We can map the following components of the proposed humanware needed in the Gresik Regency Government Environment:

1. Chair of the IT / Managerial Implementing Team, Human Resources who have the ability and knowledge in Information Systems such as Ability to manage all existing systems in the Gresik Regency Government area, Minimum S1 computer education / Information systems, Should be positioned to one structural official related to data and information management.
2. System Analyst, Human Resources who have the ability and knowledge in Information Systems such as Minimum S1 education information system or other related, Computer technology knowledge and skills, programming languages and data processing techniques. Including skills in using tools and techniques to develop software and hardware applications, a data communication technology, programming languages, and operating systems, Knowledge of organizations Knowledge and skills regarding qualitative methods such as linear programming, dynamic programming, simulation and others., Ability to analyze problems and provide solutions, Communication skills (verbal and written) and the ability to foster and maintain relationships.
3. Operator Entry Data, Human Resources in the data entry per work unit should have the ability such as Ability to operate the computer and, Understand about applications that are built, D3 or S1 Education.
4. System Developers, Human Resources in system developers should have the ability to make and carry out development plans that have been planned together with vendors or IT consultants and have at least S1 education in the SI field or other similar types.

- Database Admin, Human Resources in the database admin should have capabilities such as D3 or S1 education in information systems or other related, programming languages, system database integration.

C. Formulation of the SI Strategic Plan in the Gresik Regency Government Environment

We base the formulation of an Information System strategic plan in the Government of Gresik District on the vision, mission and strategy of the organization. Starting from the concept of policy planning to implementing SI in four years. Formulation of the strategy plan for SI Regency of Gresik in 2017 - 2021.:

Formulation of Strategic Plan for Information Systems in the Gresik Regency Government Environment 2017 – 2021

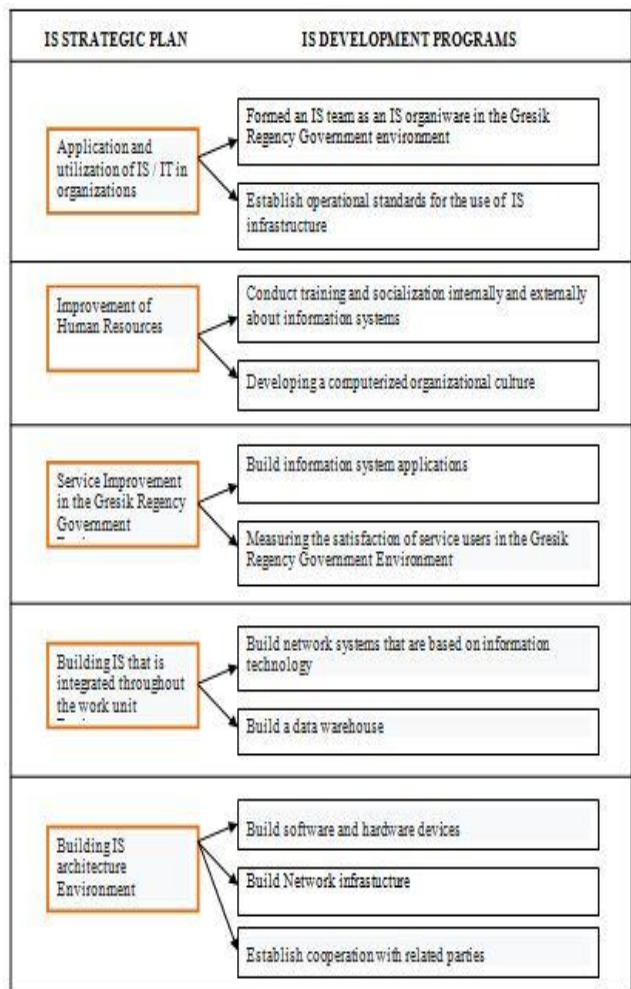


Figure 12. Formulation of Strategic Plan for Information Systems in the Gresik Regency Government Environment 2017 – 2021.

D. Roadmap of SI Strategic Plans in the Gresik Regency Government Environment

We can see the SI strategic plan roadmap for the Gresik Regency Government Offices in 2017 in the following table:

- Increasing the application and utilization of Information Systems in the Gresik Regency government environment, both and in making policies, SOPs and other related regulations.

Programme	Time Line								
	2018		2019		2020		2021		
	1	2	1	2	1	2	1	2	
Forming the SI Team as SI Organiware in the Gresik Regency Government Environment									
Establish operational standards for SI infrastructure users									

- Enhancing Human Resources Apparatus about understanding and knowledge of SI.

Programme	Time Line								
	2018		2019		2020		2021		
	1	2	1	2	1	2	1	2	
Conduct training and socialization internally and externally about information systems.									
Develop computerized organizational culture									

- Increasing the accessibility of public services that are fast, transparent and safe for services in the Gresik Regency environment by utilizing information systems.

Programme	Time Line								
	2018		2019		2020		2021		
	1	2	1	2	1	2	1	2	
Build information system applications									
Measuring the level of satisfaction of service users									

- Build an integrated information system with all work units so that they can distribute data needs properly and quickly.

Programme	Time Line								
	2018		2019		2020		2021		
	1	2	1	2	1	2	1	2	
Building an IT-based Gresik Regency network system									
Building a data warehouse									

- Making SI architecture in the environment we base The Gresik Regency Government on mapping the 4 components of the information system that have been mapped, to support the maximum use of SI

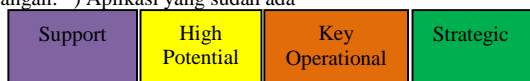
Program	Time Line							
	2018		2019		2020		2021	
	1	2	1	2	1	2	1	2
Building Hardware and Software Devices								
Building network infrastructure								
Building cooperation with related parties								

E. Roadmap for Application Development Plan Plans in the Gresik District Government Environment

Information system application development roadmap in the Gresik District Government Environment, 2017 - 2021 as in the following table:

Sistem Informasi	Time Line							
	2018		2019		2020		2021	
	1	2	1	2	1	2	1	2
Renstra Pengembangan SI								
Aplikasi Buku Tamu								
Data Warehouse								
DSS								
Ebook SOP								
Email								
GIS Penyebaran Tower Telekomunikasi								
SI Pasar Kerja Disnaker								
SI SIAK Dispenduk								
SI Aplikasi Digital Signage								
SI Arsip								
SI e- Palanning								
SI Persandian Data								
SI e- Purchasing								
SI Inventory								
SI Kerjasama Hubkominfo								
SI Keuangan Hubkominfo								
SI MONEV Kominfo								
SI Perjalanan Dinas								
SI Program Hubkominfo								
SI Dr. Kepo Dispenduk capil								
SI Aset Diskominfo								
SI MONEV Layanan Publik								
SMS Gateway								
SIMONEV Kontrak Kerja DPU								
SI Uji Keterampilan Kerja Disnaker								
SIMPEG								
Website Dinas								

Keterangan: *) Aplikasi yang sudah ada



V. CONCLUSION

A. Conclusion

From the results of the analysis and discussion of the formulation of the Strategic Plan for the SI Office of Communication and Information Technology at the Gresik Regency Government, we can draw conclusions:

1. Based on the results of the research on the condition of the development of information systems in the Gresik Regency Government environment, it can be known, among others:

a. If viewed from the internal and external environmental conditions of the Organization, then in the current conditions, the Gresik Regency Government environment is in the process of growth, where in achieving the objectives of Gresik Regency which has been planned in the vision and mission, one way to do this is through development of information systems that support the organization's future strategy.

b. Judging from the internal and external environmental conditions of the Environmental Information System of the Gresik Regency Government, the description of the conditions for now,:

- the environment of the Gresik Regency Government is still very much lacking in the application of information systems each part of the work must develop that.
- To carry out administrative and service activities in the Gresik Regency Government environment, almost all of them still use manual methods and ready-to-use applications (Microsoft Office).
- In the network infrastructure used to share the internet to all parts, only using a wifi hotspot, whereas there is no network infrastructure that connects each SKPD and village for internet connection and ease of data sharing, there is still no.

2. Constraints in implementing the System Information on the environment of the Gresik Regency Government includes:

- The absence of a Strategic Plan / Blue Print SI that became a reference in the development of SI.
- Limited human resources with an IT background responsible for the infrastructure and management of SI in this office.
- There is still very limited information system infrastructure used to support operational activities within the Gresik Regency Government environment.
- Limited finance in the funding process for the procurement of information system infrastructure and facilities.

3. Draft Information System Strategic Plan that will apply to the Gresik Regency Government environment,;

- Infoware planning, which is a planning solution designed in the Gresik Regency Government environment in using the database as a digital data

container that can later be integrated into all SI in this Office so it can run faster.

- b. Technoware planning, which is a planning solution designed in the Gresik Regency Government environment in implementing technology that is developing and that is under the needs of this office to support the ease of its operational activities.
- c. Organiware Planning, which is a planning solution designed in the section on policies, procedures, management and organizations to support information systems that will be developed so they are more directed under their goals and functions.
- d. Humanware Planning, which is a planning solution prepared by Human Resources that will later run or operate an information system that will be developed.

B. Recommendation

Based on the results of the analysis and discussion carried out in the previous chapters, the researcher provided recommendations regarding the management of SI and implementing the strategic plan of the SI of the Gresik Regency Government, including:

1. The high commitment of all levels of environmental management of the Gresik Regency Government, at the leadership level is a very necessary factor and is a key determinant of success in implementing SI / IT solutions to fit the roadmap.
2. Availability of adequate funding is one of the key elements that determines the success of implementing the SI strategic plan in the Gresik Regency Government environment, so it requires commitment from leaders to meet the budgetary needs of each SI strategy implementation so it can run according to the roadmap.
3. The ability to adapt to change is one of the key factors determining success in using SI in Gresik Regency. For that change management or change management is needed which includes the development of four organizational dimensions:
 - a. Infrastructure, which is an adaptation to the trial of the results of SI system integration comprising data flow

and DBMS with its infrastructure, applications, servers, and networks to find out whether the system has been operating after implementation.

- b. Knowledge process, which is sharing knowledge from the IT department to Users regarding the new SI which comprises data management, data storage, application usage, and operationalization of its infrastructure.
 - c. Human resources, Information Systems that require management of human resources that manage and use this SI so that it can run as expected.
 - d. Culture, cultural change in the organization also requires an implementation strategy, SI, and the results of the implementation can support the goal of Gresik Regency namely to provide excellent service.
4. The information system is only a tool that cannot create any changes if it is not supported by human resources and an adequate work culture to run these tools, therefore it is necessary to improve the quality of human resources through formal education training carried out both internally and externally.

REFERENCES

- [1] E. E. Tozer, *Strategic IS/IT Planning*. Boston, MA: Butterworth-Heinemann Ltd, 1996.
- [2] S. S. Dawes and T. A. Pardo, "Building Collaborative Digital Government Systems," in *Advances in Digital Government*, Boston, MA: Springer US, 2008, pp. 259–273.
- [3] J. Peppard and J. Ward, *The Strategic Management of Information Systems: Building A Digital Strategy*. Hoboken, New Jersey: John Wiley and Sons, 2016.
- [4] R. McGee, "Information Technology (IT) strategic planning for libraries," *Library Management*, vol. 27, no. 6–7. pp. 470–485, 2006.
- [5] K. C. Laudon and J. P. Laudon, *Management Information System: Managing The Digital Firm*. London, UK: Pearson Education Limited, 2012.
- [6] J. Hartono, *Analisis dan Desain*. Yogyakarta: ANDI Offset, 2009.
- [7] F. Ranguti, *Teknik Membedah Kasus Bisnis Analisis SWOT: Cara Perhitungan Bobot, Rating dan OCAI*. Jakarta, Indonesia: Gramedia Pustaka Utama, 2013.
- [8] L. J. Moleong, *Metodologi Penelitian Kualitatif, Revisi*. Jakarta, Indonesia: Remaja Rosdakarya, 2017.