

Creating Information Technology Masterplan of Bina Darma University to Support the Realization of Bina Darma 123

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Abstract : *Ria Andryani “ Creating Information Technology Masterplan of Bina Darma University to Support the Realisation of Bina Darma 123 ” guided by Dedi Rianto Rahadi and Muhammad Akbar. The use of information technology is becoming a very important thing for a company or organization. Even down to the small or medium-scale enterprises also have a lot to feel important application of information technology. This is due to the business environment is changing rapidly, so the ability to get information immediately have a competitive advantage. To achieve a competitive advantage is a company or organization needs to build IT Masterplan that governs all investment policies and implementation of information technology. Bina Darma University is one of the colleges that run the education system by using information technology, in accordance with the vision and mission of a university- international strandar technology in 2025 based. To achieve the vision and mission, it takes a mature concept in the form of IT Masterplan to guide investment and implementation of IT at the University of Bina Darma. IT development Masterplan using SWOT analysis to determine the strength of IT at the Bina Darma University. Research shows need to develop a Masterplan that refers to the information technology business strategy and strategic management IS / IT.*

1. INTRODUCTION

Currently, it is important thing for organization or company to use technology. Even it makes effect for minor or middle company until they look that it is important to use information technology. This is affected by business environment which run quick until it is a benefit competitive if there is ability to get information as soon as possible.

In its process, information technology is not only give efficiency, but more then gives kinds of value, such as: improving of effectiveness, internal control repair, creating best competitive, creating image of company or organization, update work process, accelerated decision making, erasing of operational mistake. If it look from educational sector, information technology give positive influence toward educational development. Information technology will

give positive value in learning process. That is related with requirement of information, knowledge, and technology.

Bina Darma University is one of colleges in South Sumatera which use education system by using information technology. It is suitable with mission and vision of Bina Darma, namely be international university based on information technology in 2025. Information technology has important role in learning process, administration, and academic information system. There are many kinds of information technology which is implemented, such as: *e-learning*, *website*, *web mail*, information academic system, wifi area, and so forth.

Implementation of best information technology needs a planning concept which is written in master plan of information technology. Master plan of information technology consists of company strategies in applying information technology. In master plan, there is manual of information technology such as what the organization or company needs. Moreover, master plan of information technology belongs to *business plan* of company.

Master plan of information technology is a middle planning in developing information system in an organization which can read the positive willing form management (*System Owner*), user (*System User*) or the changes in internal or external of organization. By developing of information technology in *short life-cycle*, it is difficult to adapt need of organization without master plan. (Amborowati, Armadyah, 2010).

The main Master plan of information technology consists of organization planning strategies in apply and create information system in organization. In it, there is manual of information system such as what organization needs. The important notice that IT master plan belongs to Business Plan. Information technology is implemented as tool to help organization in getting their mission and vision. Therefore, without the clear mission and vision from organization, IT master plan cannot create too. (Zainuddin, 2005).

According to Zainuddin (2012) there are three reasons why in investment and implementation of organization or company need Master plan of information technology:

1. IT *Masterplan* is basic plan for company in investment and implementation of information technology.
2. IT *Masterplan* help to erase the risks which come from implementation of information technology.
3. IT *Masterplan* can use as control tool and effective parameter to analysis perform and the success of IT implementation in a organization or company.

Bina Darma 123 is one of concept which is suggested by the writer in master plan of information technology. Bina Darma 123 give explanation about technical of information access at Bina Darma University by using 1 portal, 2 clicks and 3 second, the whole information which is needed can be got. Therefore, in this research the writer interest to create master plan of information technology in Bina Darma University to support the coming of Bina Darma 123.

Master plan of information technology which will be created is basic planning investation and implementation of information technology at Bina Darma University. Therefore, the problem in this research is how to creat master plan of information technology at Bina Darma University to support Bina Darma 123?. The creating of information technology is aimed to produce IT master plan of Bina Darma University which focus to the computer designing and hardware *platform* of information technology which is used. Moreover, the masterplan of information technology able to produce a manual in decision device specification in implementation of information technology at Bina Darma University.

Creating master plan of information technology at Bina Darma University is started by arrange planning of information strategy system and information technology. (Renstra IS/IT). According to Bryson (1995,4-5) planning of strategy is an knowledge which give decisions and basic acts which form and guide the organization to understand *what an organization is, what is does* and *why it does it*.

Fred David thought (1997) expand seven steps of planning strategy:

1. Formulate the mission
2. Rate threat and opportunity which come from environment
3. Make identification the power and weakness of internal organization
4. Determine the goal in long time in which it must have challenge, can be measured, consistent, logic, and the important one it must be clear.
5. Manage the strategy as a way to get the goal in the long term.
6. Make it as annuity policy and purpose annuity which detail of the goal in the long term.
7. Prepare the source
8. Do a research and evaluate the process to make it as response.

To determine strategy of IS/IT which can support the planning of mission and vision in organization, thus it is important to have well understanding in business strategy in organization. The understanding include to explanation toward: Why a business is done, what is the goal and orientation of business, when the goal is gotten, how the way to get the goal, and is there the change which is done. Thus, the main issue in develop the planning of IS/IT strategy is adaptation

of IS/IT strategy which business strategy of organization. Business strategy is done by management with opinions and analysis toward internal factor (advantages and disadvantages) and external factors of organization (opportunity and threat). It is not easy to make a business, but it must be supported by well structure of administrative, integrity of process or business activities which work in internal or external of organization and it has well competency and skill in SDM.

Competency of information technology is absolute needed to guarantee the harmonization between infrastructure and process of business organization until the business strategy which is used runs well and optimal and it can get the high competitive which is needed. The well IS/IT strategy will support some factors, such as the available of technology and application of information which is suitable with requirement until it can produce the well structure of administrative, improve the competency and fast of information access until get integrity of process in internal or external of organization include to effective or efficient control toward the using of sources, risks, and business activity: improve professionalism of SDM by improving requirement, motivation, training, and make work situation which is support by information system.

Ward and Peppard state that to apply information technology optimally, it is needed a IS/IT strategy which suitable with business strategy of organization. According to (Ward and Peppard, 2002) some researches and fact point out many consequences which get by an organization which has not IS/IT strategy, namely:

1. IT investment does not support to the goal/business purpose.
2. There is lost control toward IS/IT organization.
3. There is duplication of data; the data is not accurate and source of information which because there is no integration of IS/IT
4. There is no development priority or changing process of IS/IT
5. There is no mechanism to decide the maximal source level and best supply system
6. Information management which weak: there is different understanding between user and agent of IS/IT organization which can bring conflict and disappointment.
7. Strategy of technology which is not good.
8. Investment of infrastructure which is not suitable with the requirement.
9. Project evaluation of IS/IT which just have basis for financial aspect
10. Investment of IS/IT can be source of conflict in organization

11. Justification of investment which contradictory with business context; and cycle process of IS/IT which shorter from the requirement. IS/IT strategy can be made in a planning of IS/IT strategy.

Many researches about improving of technology master plan is shown as following explanations:

1. Dhani Gartina and Farid Thalib (2011) do a research about “Analisis dan Rancangan Cetak Biru Pengembangan Infrastruktur Jaringan Teknologi Informasi dan Komunikasi Badan Litbang Pertanian”. The condition of infrastructure development TIK networking in Badan Litbang Pertanian is not have clear orientation and goal. Meanwhile vision of Badan Litbang Pertanian will be a international research organization in 2014 demand TIK play role in making success the vision. Blue print design of development of TIK network infrastructure is one of clear supporting in successes the vision. Some of analysis is started by learn design of network in every unit, readiness of UK/UPT, SDM until to the policy. Furthermore, make evaluation toward competency which is looked from internal or external organization. Based on the evaluation is done SWOT analysis to decide planning of development strategy of TIK network infrastructure (RENSTRA PIJTIK)/blue print of PIJTIK Badan Litbang Pertanian in five period (2011 – 2016). RENSTRA PIJTIK includes of three pillars, namely development of TIK network infrastructure policy; development of TIK network infrastructure program and organizer SDM competency of TIK network program.
2. Veronica S. Moertini (2006) do a research about “Metodologi Perancangan *Masterplan* Pangkalan Data untuk Mendukung Penjaminan Mutu Perguruan Tinggi Studi Kasus UNPAR”. Camp of data at this system should consist of complex data, accurate, *up to date* and well classification until it can be functioned as sources of information in evaluate the guarantee components. By having camp of system which integrity to manage complex data and up to data by medium that is allocated by Dikti and software for this. Furthermore, collage can connect the system to national camp of data in the collage (PDPT). Therefore, evaluation toward education process in the collate which is programmed by Dikti can be guarantee.

2. METHODOLOGY OF THE RESEARH

The reference which is developed by Ward and Peppard is the method which is used to creat master plan of information technology at Bina Darma University. This method includes to three income steps and outcome steps (Ward & Peppard, 2002), namely:

1. Analysis of internal business environment which include of aspects of current business strategy, the target, sources, process, and the culture values of business organization.
2. Analysis of external business environment which include of economic aspects, industry, and rivalry of company.
3. Analysis of internal IS/IT environment which include of IS/IT condition from current business perspective, how the *maturity*, how the contribution toward business, skill of SDM and infrastructure of technology include to how portofolio of current IS/IT.
4. Analysis of external IS/IT environment which include to trend of technology and opportunity to use and the using of IS/IT by competitor, customers, and agent.

Meanwhile outcome process is a part which is done to produce IS/IT strategy of planning document, namely:

1. IS business strategy which include how each of unit or business function will use IS/IT to get their target, application of portofolio, and description of information architecture.
2. IT strategy which includes to policy and strategy of technology management and human source of IS/IT.
3. Management strategy of IS/IT which include to general elements that is used by organization, to ensure consistency of IS/IT policy using which is needed.

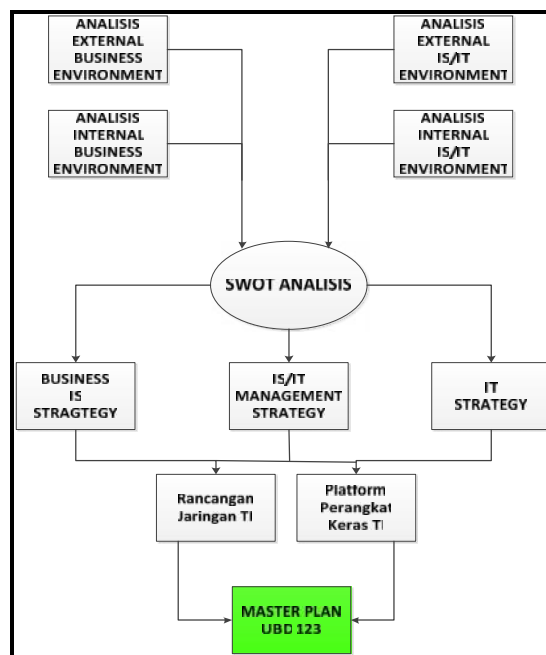


Figure Conceptual Framework with Ward & Peppard Method

2.1 Methodology

SWOT analysis is kind of methodology which is used in this research. The finding of this analysis will use as material to decide and develop master plan of information technology at Bina Darma University.

3. Finding

3.1. SWOT Analysis

SWOT analysis is arranged by the result of interview toward unit and head of unit of information system and information technology and observation toward supporting documents (secondary data) which is used in UPT-SIM Bina Darma University.

The input of this process is result of interview toward head of unit information system and information technology and observation toward information technology which have by Bina Darma University, therefore it can be got:

1. *Strengths*

Internal factor which be *Strengths* that it has by Bina Darma University is development of information technology, namely:

- a. Commitment of management, such as the policy to get mission and vision namely be international university based on information technology.
- b. Availability of SDM which master in information technology
- c. Availability of *software/hardware* and TIK network which representative and fill fullness the requirement.

2. *Weakness*

- a. There is no orientation in developing information technology of Bina Darma University which can be made as reference and applying information technology in the future by using continuously pola and directed.
- b. Socialization and product using and information technology services at Bina Darma University is not optimal.
- c. Total *Bandwidth* which available by Bina Darma University is not proportional with the total user in Bina Darma University.

3. *Opportunities*

- a. Development of information technology can be functioned as center of campus profit.
- b. Market of information technology in education and government is still opened.
- c. There are well competitive funds from DIKTI or other fund which can be used to make infrastructure and improving competence of SDM in information technology.

4. *Threats*

- a. The overflow of instant application which can give negative effect toward staff motivation in developing application. This condition causes dependence to other people.
- b. By improving TIK quality in other institute, thus Bina Darma University should develop themselves in TIK seriously in order they have same position with others.
- c. There are much *hackers and crackers* to bother quality of institute and it can cause down acceleration even break of information.

Table Formulation of SWOT matrix strategy combination

IFAS EFAS	<i>Strength</i>	<i>Weakneses</i>
<i>Opportunity</i>	Strategi SO = 1,73 + 1,76 = 3,49	Strategi WO = 1,22 + 1,76 = 2,96
<i>Threat</i>	Strategi ST = 1,73 + 1,44 = 3,17	Strategi WT = 1,22 + 1,44 = 2,66

Based on the table above, it can be seen that Bina Darma University need used SO strategy which has highest value, namely 3,49. Furthermore, it follow by ST strategy as big as 3,17, WO as big as 2,96 and WT as big as 2,66. There is every strategy, namely SO strategy is making education process which has orientation toward the using of TI, make promotion toward academic product in online and develop academic information system and increasing the wide of *bandwith*. ST strategy is relooking function of TI at organization continuously until it is suitable, accurate and go out from virus and hacker, improving of security information technology. WO strategy is making policy of TI implementation to improve internal and external service quality. WT strategy is optimally the improving of stakeholder service, improving infrastructure of

software and hardware. Based on the table, the important point to look is WT strategy which has the lowest value.

3.2.Strategi Teknologi Informasi

Computer network which is build and developed is used to service the customer in accessing data and information in fast and easy. The choosing of a system should do accuracy until infrastructures which develop is not useless. The program of development computer network is started by choosing infrastructure condition of computer network which existing. This activity include: topology design, *bandwith* management and network management. There are some strategies which is done to make bandwith management, namely requirement estimation, limitation and planning of management. In determining the choosing, choose the condition firstly. The well network is the network which can give satisfaction toward users and it is still can take in highest charge. After make badwith requirement estimation, then decide the limitation which is use as regulation in bandwith distribution.

To get the business strategy and management strategy of SI/TI above, thus the writer arrange the strategy of TI as following:

1. Improving the total of internet bandwith in Bina Darma University.
2. Increasing of total Internet *Hotspot* and *upgrade access point* to *Wireless Router Linksys EA4500* series by using the following specifications:
 - *Maximum speed (up to 450 + 450Mbps) for ultra-fast wireless transfer rates*
 - *Gigabit Ethernet ports for speeds up to 10x faster than standard Ethernet*
3. In 2012 – 2013 Upgrade of server technology until support for server virtualization.
4. In 2013 implementation of storage server.
5. In 2013 – 2017 Upgrade Router and Switch to Fiber Optic and Giga Ethernet technology.
6. In 2013 – 2017 implementation of *redundancy link* at every *backbone* of network infrastructure at Bina Darma University.
7. In 2013 – 2017 implementation of *Spanning Tree Protocol* at *Core Switch* and *Distribution Switch*.

3.3. Suggestion of Design Computer Network Development at Bina Darma University

Design of best network in a infrastructure system of computer network is a basis for the success of computer system which will be build. The aim in network design is bringing down the

stoppage and improving quality of computer network by doing segmentation. According to Agus 2010, the best design functions of computer network are:

1. To anticipate developing of network medium capability.
2. Anticipate development total and kinds of user
3. Improving the quality of network tools.
4. Placing management of network instruments
5. Capability of adaptation toward the changing process.
6. Make it easy in maintenance of management

Therefore, network design is an process that should be done with well until design function of network can be implementation with well too. Thus, the writer design toward Bina Darma University network as requirement to support Bina Darma Univeristy 123.

Meanwhile, computer network architecture is the way to use software and hardware in order one computer with others can make communication and change the data. In this chance, the writer will make planning of computer network design and segmentation of Bina Darma University with looking to the design aspects and requirement architecture. Computer network which will suggest is suitable make with requirement architecture in getting Bina Darma University 123. Topology suggestion includes of *consisting of a high speed backbone (Core Layer), concentration areas (Distribution Layer), user connection points (Access Layer)*. Design making of computer network should be suitable with *network hicarci design*. Agus, 2010 states that *Core Layer* has function to prepare the link between sites optimally. *Distribution Layer* is functioned to prepare connection based on the policy of company and *Access Layer* which is functioned to prepare workgroup to user of the network.

In this research, topology of computer network which will be designed to connect whole campus, namely main campus, campus A, campus B, campus C and campus D and the main campus as central network.

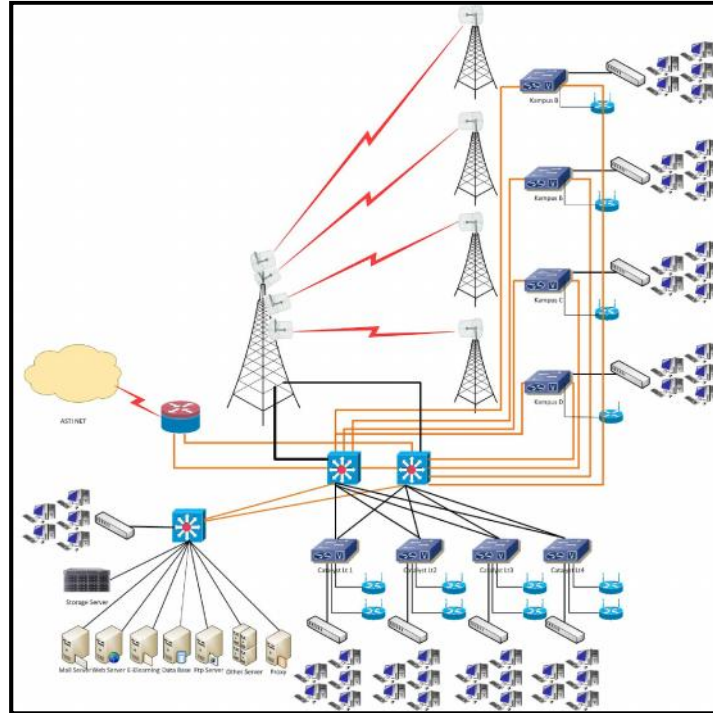


Figure of Network Topology Design at Bina Darma University

4. Conclusion

This research is suggestion of development strategy design of computer network and hardware platform which can be used as manual of information technology development until it can improve quality and competitive value of Bina Darma University.

Masterplan of information technology very important when information technology and information system which will build or in process to build. *Masterplan* of information technology makes easy in looking the how far the system is build or implementation.

This research has produced master plan of information technology at Bina Darma University which is focused to computer network design and platform or hardware of information technology and as reference in deciding tools specification in implementation of information technology at Bina Darma University.

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