The Evaluation of Information Technology Investment Management using the Domain of Portfolio Management (PM) Val IT Framework 2.0 in PT.XYZ

R P Dhaniawaty* and E Susilawati

Department of Information System, Universitas Komputer Indonesia, Jl. Dipatiukur 112-114 Bandung 40132, Indonesia

*ranipuspita@email.unikom.ac.id

Abstract. The purpose of this research is to provide optimal information in managing, selecting, delaying, rejecting, providing recommendations to increase information technology (IT) investment that is still not optimal to be able to provide value for the company. The method used in this research is Val IT Framework, where the main focus of the research is domain Portfolio Management (PM). The results obtained from the PM domain evaluation are PT. XYZ will be easier in choosing, delaying or rejecting IT investment to be implemented, thus reducing the losses that will occur, can provide more value for the company and can know the level of company maturity in making IT investment. The results of the research conducted is PT. XYZ can take the right decisions in implementing IT investments, improve IT investment process and get more value according to company strategy.

1. Introduction

Technology investment management is required by companies to optimize business strategy and information technology. The Val IT Framework is a comprehensive and pragmatic organising framework that enables the creation of business value from IT-enabled investments [1]. In optimizing business strategy and Information Technology (IT) to generate value for the company, the implementation of Val IT Framework is required. Val IT framework helps increase the probability of optional investment and create value by the highest potential [2]. There is research states that IT serves as a strategic business resource for long-term value creation due to define IT as an integral part of the structural capital of modern entrepreneurial entities, describe the current governance models and analyse the Val IT Framework to support company leaders in choosing and implementing the best investments [3]. From research on the implementation of Val IT Framework, there are several steps related to domain and process Val IT Framework that can help companies in optimizing a value [4]. The implementation of Val IT Framework 2.0 has been done in several research, where Val IT Framework 2.0 is not fully implemented, so can’t know the return from IT investments that will improve the quality of governance of IT investments [5].

The main focus of PT. XYZ is managing the overall investment portfolio for optimizing the value of the enterprise, the company focus is similar to that of the Portfolio Management (PM) domain in the Val IT...
Framework [6]. In addition the domain PM can manage all enterprise’s investment on common basis IT enabled investments must be included in overall portfolio and balancing overall portfolio [7]. There are several research that have been done related to the application of Val IT Framework. In a research on measurement value governance topics, the main focus is to measure the extent to which the value determination process has been implemented and assist leaders in deciding on information technology investments in accordance with corporate strategy [8]. While in research evaluation investment management topic, the main focus is to ensure that program of information technology investment can give the optimal result by the appropriate cost and within acceptable risk limit [9]. Conducting evaluation of information technology investment management required maturity model to help enterprise identify its current state and possible future states, the point is to set the priorities for further improvements [10].

From some research that used as reference there is still no discussion about evaluation of information technology investment management at domain portfolio management. While management in the domain of PM is the most important process because this domain can determine the information technology investment in accordance with the strategy and can generate value for the company. The importance of this PM domain in determining the technology investment that will be applied in the company, this research will discuss about the PM domain evaluation, whether it is in accordance with the target desired by the company or not and whether it can provide more value for the company.

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2. Methods
The method used in this research is Val IT Framework 2.0 with a focus on domain Portfolio Management (PM). There are several stages in the evaluation that is, collect data by using questionnaire given to 20 respondents who understand information technology investment. After that identify the domain of PM by interviewing and distributing questionnaires to respondents to find out whether the process in the PM domain has been used and applied in making information technology investment by PT. XYZ or not. Measurements were made by calculating the score on the questionnaire that has been filled by using percentage analysis and likert scale. The next stage is measurement of maturity level is done after obtaining the result of identification at each process in PM domain. After getting the value from the questionnaire, then do the measurement maturity level by using the formula below. Last stage is evaluation, in the evaluation stage is divided into two parts.

The first evaluation is the evaluation of PM domain implementation, whether the PM domain has been fully applied to the company or not. If it has a poor assessment it will be given recommendations to improve the implementation of information technology investment. The existence of this evaluation can help PT. XYZ to improve the process of planning information technology investment in the future order to achieve the target in accordance with the wishes of PT. XYZ. The second evaluation is evaluation of the maturity level of PM by recommending that the target maturity level desired by PT. XYZ can be achieved. At this stage the comparison between the current maturity level, the average maturity level of the company and maturity level of company target. After doing the comparison there would have a GAP between the current maturity level and the desired target maturity level. The method of this research (Figure 1).
3. Results and discussion

3.1. Data of respondents
Data collection was done by using questionnaire given to 20 respondents, as in (Table 1) below:

| No | Level Management       | Qty of Respondents |
|----|------------------------|--------------------|
| 1  | Top Level Management   | 2                  |
| 2  | Middle Level Management| 6                  |
| 3  | Low Level Management   | 12                 |
|    | Total                  | 20                 |

3.2. Identification of Portfolio Management (PM)
After calculating the amount given to 20 respondents, then the value can be used to measure PM maturity level. The following results of the PM questionnaire can be seen in (Table 2):

| No | PM 1 | PM 2 | PM 3 | PM 4 | PM 5 | PM 6 |
|----|------|------|------|------|------|------|
| 1  | 70   | 44   | 66   | 32   | 34   | 38   |
| 2  | 44   |      | 50   | 60   |      | 34   |
| 3  | 36   |      | 54   | 66   |      |      |
| 4  | 72   |      | 56   | 34   |      |      |
| 5  |      |      | 50   |      |      |      |
| 6  |      |      | 40   |      |      |      |
| 7  |      |      | 50   |      |      |      |
| 8  |      |      | 54   |      |      |      |
|    | Total| 222  | 44   | 420  | 192  | 34   | 72   |

Viewed from the results of questionnaire process on the domain PM, indicating that PM process in PT. XYZ is 80% has been applied. Although if viewed from the performance of the PM process, there are some processes that are still not maximized and there are still processes that have not been fully implemented.

There are several PM domain implementation process that need to be repaired is PM 2.1, PM 4.1, PM 4.4, PM 5.1, PM 6.1 and PM 6.2.
3.3. Measurement of maturity level Portfolio Management (PM)
This measurement is done by looking at the results of identification process PM in the current. The following can be seen in (Table 3) on the results of the measurement of Portfolio Management maturity level PM in accordance with the current conditions in PT. XYZ:

| No | Process | Total Questionnaire | Total Answer | Index |
|----|---------|---------------------|--------------|-------|
| 1  | PM 1    | 80                  | 222          | 2,775 |
| 2  | PM 2    | 20                  | 44           | 2,2   |
| 3  | PM 3    | 160                 | 420          | 2,625 |
| 4  | PM 4    | 80                  | 192          | 2,4   |
| 5  | PM 5    | 20                  | 34           | 1,7   |
| 6  | PM 6    | 40                  | 72           | 1,8   |

After obtained the calculation maturity level PM on the condition of PT. XYZ at this time and done comparison with maturity level PM according to desired target. The following can be seen in (Figure 2) comparison of current maturity level and target of PT. XYZ:

Figure 2. Comparison of maturity level Portfolio Management (PM).

3.4. Evaluation implementation of Portfolio Management (PM)
Evaluation of the implementation of the process within the domain PM will be given recommendations in accordance with the results of the identification that has been obtained, where the evaluation is useful to improve the implementation process of information technology investment PT. XYZ in the future to be more directed and in accordance with the vision, mission and strategy of PT. XYZ. The following can be seen in (Table 4) in the form of improvement recommendations for the implementation of information technology investment with the main focus of PM:
Table 4. Evaluation implementation of Portfolio Management (PM).

| Process | Recommended Process Improvement |
|---------|---------------------------------|
| PM 1    | Needs adjustment between business strategy and IT strategy of PT. XYZ. It needs to be the process of identifying new technology opportunities that can support and influence strategy. The allocation of IT investment funding needs is adjusted to the company's strategy. The company's business strategy with the company's IT strategy must be in line and have the goal of achieving the target as per the desire. |
| PM 2    | Before implementing the IT investment, PT. XYZ must be able to ensure in advance the availability of funding sources and needs to establish IT investment financing procedures. |
| PM 3    | Need to perform management related to human resource allocation and analyze, create strategies to maintain high quality human resources, supervise and repair the allocation of human resources. |
| PM 4    | Need to conduct evaluation and assessment of information technology investment to be applied, top management must be able to take IT investment decisions where decision making can be considered through the identification of the alignment of vision and mission of the company. |
| PM 5    | Need to monitor and report the portfolio of IT investment on a regular basis and on time. This reporting serves to provide an overview of the level of achievement that has been done. A review of the portfolio needs to be done to avoid duplication of IT investments. Company needs prioritize and evaluate the portfolio of IT investments if there is a change of needs and the business strategy of the company, so it needs to be adjusted again. |

3.5. Evaluation of maturity level Portfolio Management (PM)

From the measurement of maturity level PM that has been done got comparison result about application of current information technology investment with application of information technology investment according to target desired by PT. XYZ. After comparison there is a GAP between the current maturity level and the company's target level maturity. To overcome the GAP required corrective action to achieve the target in accordance with the desired by PT. XYZ. The following can be seen in (Table 5) in the form of improvement recommendations on the maturity level of PM:

Table 5. Evaluation of maturity level Portfolio Management (PM).

| Process | Maturity Level Currently | Target | GAP | Recommended Process Improvement |
|---------|--------------------------|--------|-----|---------------------------------|
| PM 1    | 2,775                    | 4      | 1,225 | Level 2 to 3 - Need to raise awareness of the need to manage alignment between business strategy and IT strategy of PT. XYZ. Level 3 to 4 - Companies need to identify IT opportunities that will be applied whether to influence the company's strategy. Level 2 to 3 - Requires clear and detailed IT services, this service is useful for investors in the field of IT investment. Steps should always be monitored, whether the company benefits from IT investment or losses. |
| PM 2    | 2,2                      | 3      | 0,8  |                                |
Table 5. Cont.

| Process | Maturity Level | GAP | Recommended Process Improvement |
|---------|----------------|-----|---------------------------------|
|         | Currently | Target |                                      |
| PM 1    | 2,775     | 4     | 1,225                            |
|         | Level 2 to 3 - Need to raise awareness of the need to manage alignment between business strategy and IT strategy of PT. XYZ. |
| PM 4    | 2.4       | 3     | 0.6                             |
|         | Level 2 to 3 - Establish a business target to describe expenditures to be spent in the future. |
| PM 5    | 1.7       | 2     | 0.3                             |
|         | Level 1 to 2 - Monitoring and reporting are well recorded so that it will give an idea of the level of achievement that has been made and make improvements in case of errors. |
| PM 6    | 1.8       | 2     | 0.2                             |
|         | Level 1 to 2 - Companies need to prioritize which information technology investment is more useful. |

From the results of the evaluation that has been done the existence of PM domain has reached 80% already applied in PT. XYZ, but there are still some processes that have not been implemented yet. Some PM processes that have not been implemented are PM 2.1, PM 4.1, PM 4.4, PM 5.1, PM 6.1 and PM 6.2. In addition there is a maturity level that must be done improvements such as PM 1 and 3 require an improvement from the current level 2 to target level 3, while PM 5 and 6 is necessary to increase from the current level 1 to level 2 target. This causes a bit of dissonance between the implementation of IT investment with corporate strategy and reduced value obtained by the company.

4. Conclusion
PT. XYZ needs to make improvements to the company's IT investment implementation process, tailored to the recommendations of IT investment evaluation results. Domain Portfolio Management (PM) makes it easy for companies to make IT investments, reduce losses that will occur in the implementation of IT investments, provide more value for the company and know the level of company maturity in investing in information technology.

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