FINAL PROJECT – TI 141501

TECHNOLOGY REQUIREMENT MAPPING FOR COMPUTER ASSET IN SURABAYA CITY GOVERNMENT
(Case Study: *Badan Perencanaan dan Pembangunan Kota*)

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TUGAS AKHIR – TI 141501

PEMETAAN KEBUTUHAN TEKNOLOGI PADA KOMPUTER UNTUK PEMERINTAH KOTA SURABAYA (STUDI KASUS: BADAN PERENCANAAN DAN PEMBANGUNAN KOTA)

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APPROVAL SHEET

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FINAL PROJECT

Submitted to Qualify the Requirement of Bachelor Degree
Department of Industrial Engineering
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COMPUTER TECHNOLOGY REQUIREMENT MAPPING IN SURABAYA CITY GOVERNMENT (CASE STUDY: *BADAN PERENCANAAN DAN PEMBANGUNAN KOTA)*

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ABSTRACT

Computer is one of many supporting tools needed by office including in Surabaya city government. The growth of innovation and development in Surabaya city government, has affected the number of computer asset request from each *Satuan Kerja Perangkat Daerah* (SKPDs) in procurement unit. Technology is one of the important aspect that needed to be considered in selecting computer unit. However, a speedy growth in technology causing a computer technology mapping in organization becomes necessary in order to avoid technology gap. Because, technology gap itself can lead to waste of budget spent on the computer technology. Based on the direct survey, the deployment of the computer becomes a major cause that trigger a sharp increment in computer asset request from SKPD. Through the analysis of job analysis and application workload in each functional position, this research aims to construct a general framework to define the level of technology for each functional position. This framework will be used to define and optimize the deployment of computer unit in each SKPDs based on the function. Besides, optimization in computer deployment can reduce unnecessary procurement that will help procurement unit to save more budget and avoid technology gap.

Key words: asset management, computer technology mapping, job analysis, workload, computer maintenance.

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PEMETAAN KEBUTUHAN TEKNOLOGI PADA KOMPUTER UNTUK PEMERINTAH KOTA SURABAYA (STUDI KASUS: BADAN PERENCANAAN DAN PEMBANGUNAN KOTA)

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ABSTRAK

Komputer merupakan salah satu alat pendukung perkerjaan yang sangat penting, dan melekat erat pada setiap individu termasuk di kantor pemerintahan. Saat ini, perkembangan pelayanan yang ada di Surabaya telah berpengaruh pada meningkatnya jumlah permintaan komputer dari setiap Satuan Kerja Perangkat Daerah (SKPD) yang masuk ke Unit Perlengkapan. Seperti yang diketahui bahwa teknologi merupakan salah satu faktor penting dalam pemilihan komputer. Perkembangan teknologi yang sangat cepat menyebabkan pemetaan kebutuhan teknologi untuk setiap jabatan menjadi penting agar tidak terjadi kerenggangan teknologi pada setiap jabatan. Dimana, kerenggangan terhadap teknologi untuk setiap jabatan dapat memicu pengeluaran yang sia-sia untuk teknologi komputer. Berdasarkan pada pemetaan yang telah dilakukan pada survei lapangan, kesalahan pada pengalokasian komputer menjadi masalah utama yang memicu kenaikan pada permintaan komputer. Melalui analisa beban kerja dan beban kerja aplikasi yang digunakan pada setiap jabatan, penelitian ini bertujuan untuk menyusun sebuah kerangka umum yang dapat digunakan untuk menentukan tingkat kebutuhan teknologi pada setiap jabatan. Kerangka ini akan digunakan untuk membantu mengoptimalkan pembagian komputer di setiap SKPD. Selain itu, optimasi dalam pengalokasian komputer dapat membantu bagian perlengkapan dan pengadaan untuk menghemat pengeluaran dan menghindari adanya *gap* untuk teknologi.

Kata kunci: manajemen aset, pemetaan teknologi komputer, *job analysis,* beban kerja, perawatan komputer.

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I am very aware that this research is far away from being perfect. I perceive that the completion of this research is one of stairs in my career development. Therefore, I am expecting for any constructive critics and suggestion for further self-development. I hope that this research can be used as it is intended and beneficial for my surrounding.

Surabaya,   July 2016

Nola Vila Violita

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CHAPTER I
INTRODUCTION

This chapter explains about research background, problem identification, research objectives and research benefits. Additionally, this chapter also explains about research boundaries and research outline.

1.1 Background

Surabaya as the second largest city in Indonesia right after Jakarta has more than 2.5 million people in 2015. This population spreads in 31 subdistricts (Dinas Kependudukan dan Pencatatan Sipil Surabaya, 2015). Compared to the population in 2012, this number has decreased significantly from the population survey in 2012, which reach more than 3 million people. The comparison of the area density between each sub-district in 2015 based on the number of population and sex can be seen in Figure 1.1 below.
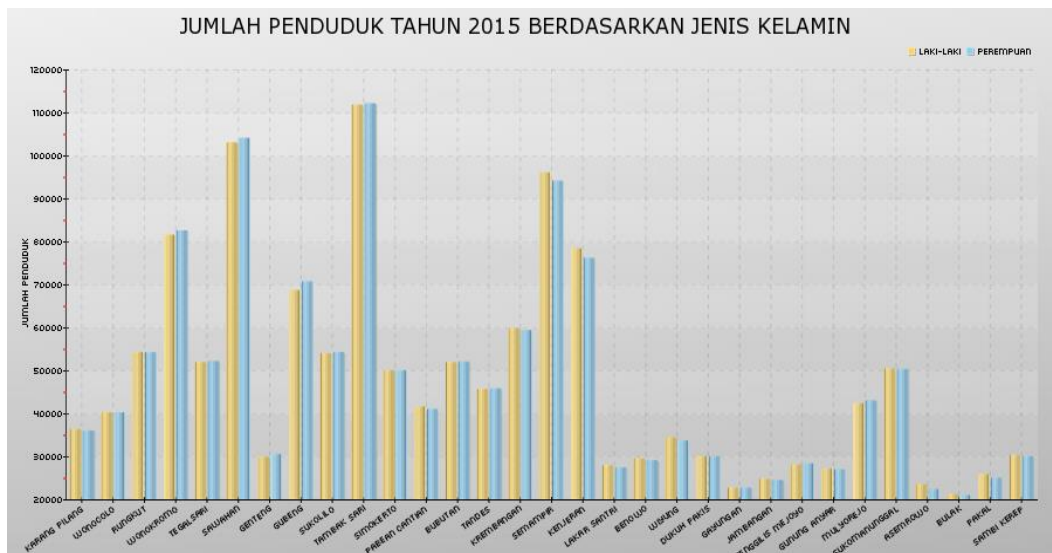
Figure 1.1 Number of Population in Surabaya based on sub-district and sex, 2015 (Source: *Dinas Kependudukan dan Pencatatan Sipil Surabaya,* 2015)

High population leads to a very complicated government system related to several public services in Surabaya. Therefore, since 2002, in order to increase the

public services, Surabaya city government has implement a system called as E-Government. E-government is an online platform of information system which used by Surabaya City government. In Surabaya, the system for E-government classified into two kind of systems which are budgeting management and public services. Budgeting management includes any function such as e-budgeting, e-project, e-procurement, e-delivery, e-controlling, and e-performance. While, several services that can be accessed online such as e-*musrenbang,* e-*sapawarga,* e-*perijinan,* and electronic complaint (Tribun News, 2012).

Several cities in Indonesia have been tried to implement E-government system. However, the implementation in Surabaya considered as the successful one (Tribun News, 2012). Following this achievement, Surabaya stated as the national role model for e-government implementation. The implementation of E-government has changed most of the system in the government. Nowadays, Surabaya city government concerns to implement and develop an IT based services. Surabaya city government also committed to increase their performance in public services, accelerate their public service, and provide an easy access for several services by using online system.

Most SKPDs (*Satuan Kerja Perangkat Daerah)* are striving for fast, effective and efficient work. Therefore, time is becoming something crucial in accomplishing their main duties. Computer as one of the IT based equipment is affected by this condition as well. According to the secondary data obtained from SIMBADA (*Sistem Informasi Manajemen Barang Daerah),* Most SKPDsssss (*Satuan Kerja Perangkat Daerah)* have proposed a high number of computer asset to the procurement unit of Surabaya city government.

SIMBADA (*Sistem Informasi Manajemen Barang Daerah)* or information system for asset management was built in order to ease and accelerate the process of asset management, minimize human error by reducing the number of manual work and replace it with computerize system (simbada.surabaya.go.id). The previous asset management system used by Surabaya city government was done manually by recording all of the assets in each SKPD. This system considered as time-consuming, complicated, and contains high possibility of human error. Through online and computerize system, the recapitulation and asset monitoring

system can be improved in term of time and human error. This system also can be used for analyzing the growth of the asset in each SKPD.

Figure 1.2 shows an example of computer asset that increase sharply for most SKPDs. However, it shows that three SKPDs has relatively higher increment than any other SKPD. Those SKPD are *Dinas Pendidikan, Dinas Pendapatan dan Pengelolaan Keuangan* and *Dinas Kesehatan*. In several cases obtained from preliminary study, lack of computer still happens in SKPD even if the growth of computer shows that most SKPDs has a certain number of additional computer during the past 10 years. This problem happens since computer needs analysis required not only to state the requirement number of computer and but also the quality (specification) needed by each SPKD. In this case, the quality can be interpreted as the capability of the computer or the technology carried out by the computer. Technology needs to be considered as the main duties for each function with certain job description in every SKPD. Different functions will result in different technology requirement. For example, an administrative function will need a different specification of computer unit from the programmer function. Fulfilling the requirement of a computers only in term of quantity can result in over specification or under specification. This condition leads to waste of budget or ineffective work.
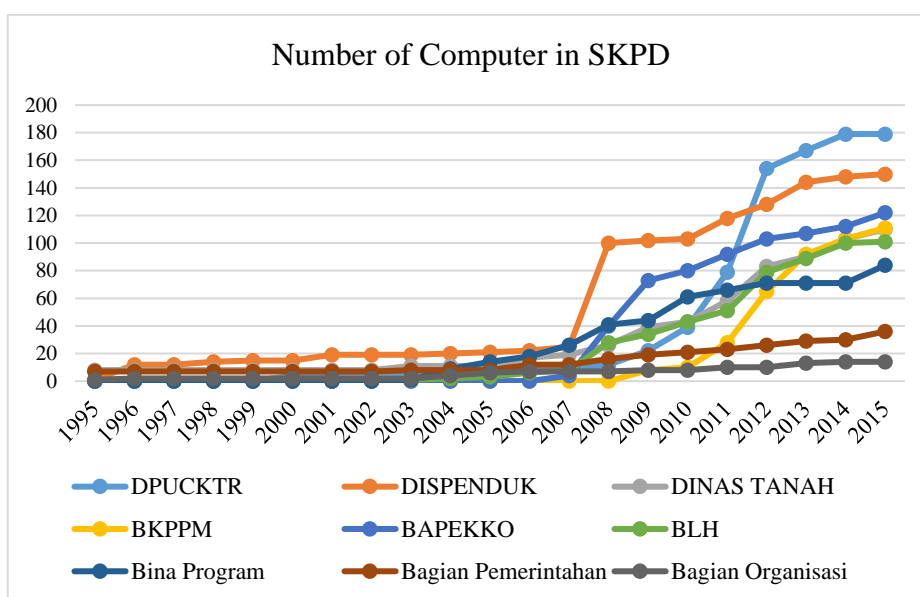
Figure 1.2 Graph of number of computer in 72 SKPD (1995-2015)
(Source: SIMBADA)

3

Nowadays, technology is one of many aspects in human life that move very fast from time to time. People are getting smarter as a customer, that makes them becomes a demanding customer. Researcher in technology area strives for fast and innovative development for technology itself. This phenomenon then called as speed of technology. According to The Emerging Future (TEF) (2012), human perspective of technology advancement in five years will increase exponentially. Every twelve to eighteen months, computers double their capabilities and so do with their performance and technologies that use them. TEF also stated that largest company and government have used Ray Kurzweil's historical trends of exponential growth chart for predicting the growth of technology. This means that in only several years from now the technology that we have will be very rapid, advanced, and profound. Speed of technology is something that can not be rejected. Therefore, for an organization that not in the scope of technology, it is very important to carefully select the best suitable technology so that there will be no over expenses. As not all of the position in SKPD need to catch up with the latest technology. The graph of technology speed shown in Figure 1.3 below.
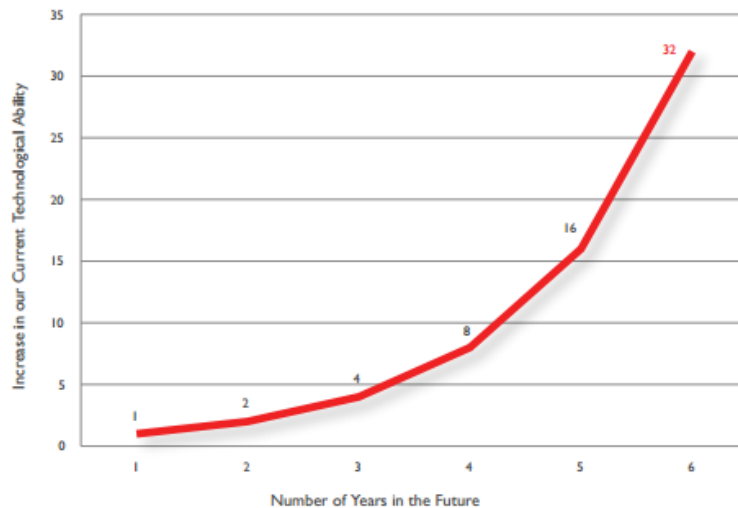
Figure 1.3 Speed of Technology within 5 years
(Source: The Emerging Future, 2012)

Technology is one of many aspects that affect the cost of computer. The higher the technology attached to the computer the higher the price. However, with a tight competition in the market, few companies trying to provide best technology

with reasonable price. Considering the number of computer needed in the whole SKPD in Surabaya city government, this condition should be considering as the advantage since the government can choose good technology with reasonable price in the market. However, the existing condition in Procurement unit, the standard operating procedure for proposing new asset only assessing the number of computer but does not assessing the specification of the computer. Basically, technology is considered as one factor in proposing new computer asset. However, there is no brief explanation related to the factor that used by Procurement unit in order to arrange the technology audit for the computer asset. In order to easily analyzed the needs of technology for each job description in SKPD, there should be a framework that used as the guidance in deciding which technology requirement that suitable with the job description.

As it can be seen in Figure 1.3 the growth of the number of employee in BAPPEKO is not as high as the growth of the number of computer in Figure 1.2. This condition triggers the questions related to the growth of the computer that do not liniear with the growth of the computer that belongs to personal asset.
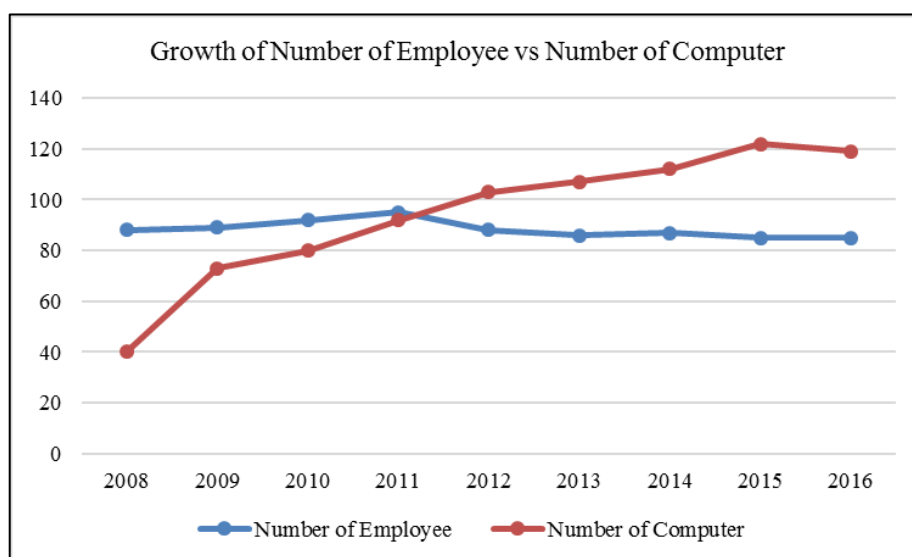
Figure 1.3 Number of Employee Growth in BAPPEKO

Moreover, BAPPEKO (*Badan Perencanaan dan Pembangunan Kota)* was chosen as the pilot project in this research. It is because according to the interview

done with the procurement unit BAPPEKO has a better asset management record compared to the other SKPD. Moreover, BAPPEKO already represent several functions that commonly exist in the other SKPD from the administrative function until heavy duty function that utilize heavy computer software. This condition makes BAPPEKO becomes an ideal object for this research. Through the preliminary study, it is known that BAPPEKO needs several additional computers as several employees that works with heavy application have an under technology computer. However, the fact is BAPPEKO already own several high technology computers but allocated to other employees with lower workload. This condition then leads to technology gap. Therefore, an evaluation related to the allocation of computer technology based on the workload needs to be implemented to avoid technology gap.

1.2   Problem Identification

Based on the research background stated before, the main problem of this research is analyzing computer technology requirement in SKPD (*Satuan Kerja Perangkat Daerah*) considering the workload from each functional job structure.

1.3   Research Objectives

The objectives of this research are

1. To measure the technology requirements in SKPD by considering the workload of each functional job.
2. To make a mechanism that increase the usage of computer assets by optimizing the deployment of computer technology.
3. To improve the functions of procurement unit by creating a mechanism for proposing new asset and allocating computer asset.

1.4   Benefit

The benefits of this research for both author and the government are:

1.4.1   For Author

1. To understand the role of Industrial Engineer in solving a real case problem.

2. To implement the theoretical science obtained during the study into practical situation.

1.4.2   For Government

1. To be able to understand root cause of lack of computer assets in SKPD.

2. To improve the mechanism of computer assets management in SKPD.

3. To improve the mechanism in proposing new computer asset.

1.5   Research Boundary

Research boundary is the scope of the research that will be used during research. Research boundary classified into limitations and assumptions.

1.5.1   Limitations

In this subchapter, it will explain about the limitations that used in the research. Limitations are set to narrow the scope and focusing the research on the key problem. The limitations used are:

1. To generate a general recommendation for technology evaluation, one SKPD is chosen as the pilot project for this research. The SKPD that chosen as the pilot project is BAPPEKO (*Badan Perencanaan dan Pembangunan Kota).*

2. Two factors that considered in this research are workload and level of technology.

1.5.2   Assumptions

In this subchapter, it will define the assumptions that used in the research, which are:

1. There is no data surge related to computer asset in BAPPEKO.

2. The existing condition in the other SKPD is assume to be similar with BAPPEKO.

1.6   Research Outline

        The structure of this research is divided into several chapter. While each chapter will be related to one another according to the sequence of problems solving methodology brought by the writer. The outline of the research explained as follows:

CHAPTER I: INTRODUCTION

This chapter explains research background, problem identification, research objectives and research benefit. Additionally, this chapter also explains about research boundaries and research outline.

CHAPTER II: LITERATURE REVIEW

This chapter contains a literature review that used in this research, including the basic theory and academic background that used as references in completing the research. This chapter will also explain about computer and its part, computer classification, job analysis and job description, interview, survey, and standard operating procedure.

CHAPTER III: RESEARCH METHODOLOGY

This chapter explains about the sequence of problem solving methods in conducting the research. The deployment of the systematic scheme used in supporting the research from the data collections stage, data analysis, generic recommendation formulation, until conclusion and suggestion of the research.

CHAPTER IV EXPOSING CURRENT CONDITION

This chapter consists of data collection needed to conduct the research. The main duties for each function in SKPD obtained from the survey and interview with the manager and questioannaire review regarding the computer assessment from the user.

CHAPTER V ANALYSIS AND INTERPRETATION

This chapter explains about the analysis regarding the gap of the condition between the current condition and the proposed recommendation. The analysis explains the

gap in each stage and define several benefits regarding the usage of the recommendation.

CHAPTER VI GENERIC RECOMMENDATION

This chapter explains the formation of several generic recommendations needed to support the performance of computer asset management system. The generic recommendation includes any function such as standard operating procedure for proposing new computer asset, matrix of level of technology, computer allocation mechanism, and downgrade mechanism.

CHAPTER VII CONCLUSION AND SUGGESTION

This chapter contains the conclusion from the research regarding the objectives of the research. This chapter will also describe the suggestion regarding the future research.

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CHAPTER II
LITERATURE REVIEW

This chapter contains a literature review that used in this research, including the basic theory and academic background that used as references in completing the research. This chapter will also explain about computer and its part, computer classification, interview, survey, E-government, job analysis, and job description.

2.1   E-government of Surabaya

E-government is a computerize system used for running several functions within the government. In Surabaya, E-government used to manage budgeting problems and public services (tribunnews.com, 2012). Budgeting management include several processes such as e-budgeting, e-project, e-procurement, e-delivery, e-controlling, and e-performance. While for public services, the usage of e-government includes several functions such as e-*sapawarga,* e-*perijinan,* e-*musrenbang,* and electronic complaint.

E-budgeting used to construct the budgeting plan and system in every SKPD. It contains the whole budgeting plan including the big one and small projects such as office stationary. Surabaya city mayor stated that the guidance for the E-government system is SNI (*Standar Nasional Indonesia).* Before the implementation of online and computerize systems, several records are still done manually using textbooks. This system also standardizes the overtime payment. Therefore, in one SKPD and another the number will be just the same. It also includes the official travel expenses standard, with fixed number for certain destination. This budgeting plan then checked by the examiner, if the allocation inputted to the system is more than the SKPD allocation budget then the system will send a notification.

E-project used to plan a project in each SKPD. This include any information related to when the project needs to be send to auction (if the project valued more than RP 100 million), is there any steps that can be done using self-management, and when the project finished. As long as the SKPD complete the processes, the schedule along with the budgeting plan will complete and the city

mayor can review and sign the contract. Then the controlling process of the project can be done through e-controlling functions.

E-delivery used to control any contracts own by the government with the third parties. For example, the company already win the auction, however, the company do not finish the project in the due date as it is stated in the contract. This information also can be controlled through e-delivery. Then, the government can directly with hold the bank warranty of the company.

Every month, there will be an evaluation regarding any delays happen to the project. While, in every end of the year, there will be a performance analysis from every SKPD considering the planning and the realization that already run through the year. For employee, they need to fulfill the performance using their own username and password, as this can affect their government support and performance bonus. This system ensuring that besides being monitored as organization, the system also monitor the individual performance.

2.2   Computer

Computer is a programmable machine that allows its user to store all sorts of informations or data and then processed those informations or data into actions that requested by the user such as organizing words, calculating numbers, organizing information etc. (Barata, 1999). According to Hamacher, a computer is an electronic device that works very fast and accepting digital information as an input, processing the input based on the program in the memory and producing an output in the form of information.

2.2.1   Components of a Computer

Computer is construct from two important parts: the hardware and the software. Hardware is the physical equipment that constructs the computer. It is required to create, use, manipulate and store electronic data (Barata, 1999). A Software is the computerized instructions that operate a computer and execute particular functions or tasks (Barata, 1999).

Several hardware that critical for computer in order to fulfill its purpose are:

1. Central Processing Unit

   This hardware is a chip playing a role as the "brain" of the computer that enables it to process any input into specific output requested by the user. The unit in Figure 2.1 known as processor.
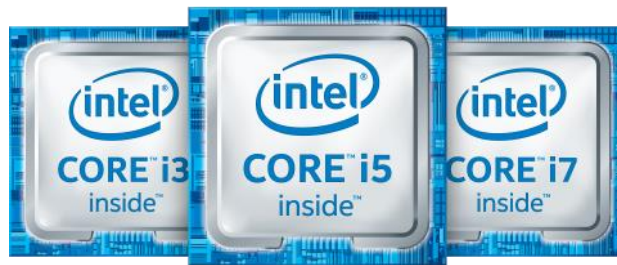
Figure 2.1 Processor of computer

(Source: Dukun Tekno, 2016)

   This chip is responsible for most system that work on the computer. It ensures the program or software of the computer working as expected.

2. Memory

   This component is a component inside the computer that holds any data waiting to be processed. This component ensuring the data processing is well structured while the user is operating the computer.

Figure 2.2 Random Access Memory (RAM)

(Source: pcplus.com, 2015)

3. Storage Device

        This component used by the computer to store the data. This component is responsible in restoring and retrieving data from the computer. It organizes the data stored in the computer so that the system can easily retrieve the data when its needed.

Figure 2.3 Hard disk of computer

(Source: pcplus.com, 2015)

4. Graphics Chipset (VGA)

        This component is supporting component that used to support the graphical performance of the computer. This chipset is responsible in the limpidity of the screen display and the quality of any graphical output from the computer.
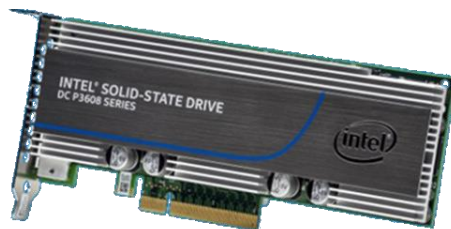
Figure 2.4 Video Graphic Array (VGA) chipset of computer

(Source: pcmedia, 2015)

5. Motherboard

Motherboard is the main board where most of the important hardware of computer are putting together. Mainboard used as the platform for the processor, memory (RAM), graphical chipset etc. In traditional computer, this board attaches to the system unit of the computer. While in the modern computer without system unit (All in one PC) this board attach directly to the display screen. In a traditional computer, with system unit, all of the components attach to this board are not permanently attach. Therefore, if one component is broken, the maintenance or the replacement can be done only for the broken component. This system also allows any upgrade such as higher capacity of memory, higher capacity of storage disk etc. However, in the modern one where all of the parts attach directly to the board. Any failures in one component can result in replacing the whole board.

Figure 2.5 Motherboard or main board of computer
(Source: pcmedia, 2016)

6. Input Devices

Input devices are any devices that allows data and instructions enter a computer. Several input devices for the computer such as keyboard and mouse. Keyboard used to input any character to the computer and moving

the cursor for several purpose only. While, mouse used to operate the cursor in the computer to run certain functions.

Figure 2.6 Computer keyboard

(Source: PNG Img, 2016)

Figure 2.7 Computer mouse

(Source: PNG Img, 2016)

7. Output Devices

Output devices are the devices that allow any information to be represented to the user as the result of the input that already given by the user. The output devices of the computer such as display screen (monitor) or printer. Output device allows the user of the computer interact with the machine using any information present by these units.

Figure 2.8 Display screen or monitor

(Source: PNG img, 2016)

2.2.2   Classification of the Computer

Computers are classified based on several factors such as based on the usage, data processed, capacity and size, and generation.

2.2.2.1   Based on the Usage

Based on its usage, computer divided into two categories, which are special purpose computer and general purpose computer.

1. Special purpose computer

   Special purpose computers are designed for special problems such as HORN-5 that used for electroholography real-time, SGI computer that specifically used for graphic processing, SPC used for particle system simulation etc.

2. General purpose computer

   General-purpose computers used to solve many kinds of problem, with many software but limited capability (not advanced capability and special capability as used in special purpose computer) such as personal computer.

2.2.2.2   Based on the Data Processed

Based on the data processed, computers divided into three categories, which are:

1. Analog Computer

    Analog computer is a computer that capable of proceeding a qualitative data. The data compute to the computer not in the form if alphabet or symbols but in the form of a condition such as a temperature, humidity, height or velocity which is a condition that later can be transform as the dimension by the computer. The example of this computer is a computer used in gas station that shown the amount of money need to be paid for the gasoline streamed to the tank.

2. Digital Computer

    Digital computer used to proceed a quantitative data and capable of processing thousands of data. The data compute to the digital computer in the form of a symbol that represents a certain meaning such as alphabets or numbers. The example of this computer is a personal computer, notebook etc.

3. Hybrid Computer

    The hybrid computer is a computer that capable to proceed both qualitative and quantitative data. This computer is usually known as the combinations of analog and digital computer. Mostly, this type of computers used in hospital, such as the computer that used to check the condition of the patient but can produce an output in the form of graphic, picture or words.

2.2.2.3   Based on the Generation

    Based on its generation, computers are divided into five categories, which are:

1. First Generation

    The first generation of computer exists during 1946–1959. The characteristics of this generations are using vacuum tube as the circuit, the program can only be accessed using machine language, the main memory using magnetic core, large in physical size, space-consuming, easily get hot, relatively slow in processing, small storage space, need a large electricity and only for business application. The example of a

computer from this generation is ENIAC 1946, IBM Selective Sequence Electronic Calculator 1948, ACE (Automatic Calculating Engine) 1950 etc.

2. Second Generation

This generation knew from 1959-1964. The characteristics of these generations are transistor as the circuit, larger memory capacity, using a removable magnetic disk as the additional storage, smaller in size, faster in processing, the lower electricity needed and available for business and technical field. The example of a computer from this generation is IBM 401, UNIVAC, NCR (National Cash Register) etc.

3. Third Generation

This generation knew from 1964-1970. The characteristics of the computer from this generation are: the circuit already used an Integrated Circuit (IC) in the form of hybrid IC and monolithic IC increase in software capabilities, faster in processing, larger memory and it is already using additional storage disk in the form of random access. Besides, it also needs lower electricity, allowing multiprocessing and multiprogramming, development of input and output devices, cheaper and can be used to communicate between several computers.

4. Fourth Generation

This generation knows from 1979 up until now. This generation is the advanced generation of the computer. The characteristic of this generation is located in the circuit used by the computer. This generation already uses Large Scale Integration (LSI) which is the compression of thousands IC in one chip. The other development is the existence of microprocessor and semiconductor.

2.3 Job Analysis and Job Description

Job analysis is one of a systematic approach to collect information about a job such as tasks, duties, responsibilities, and the skills required to perform those tasks (Quirin, 2001). Job analysis is one of important tools in human resources (HR) planning. It helps human resources function in determining several things such as necessity of the job, equipment need to perform the job, skills required to perform the job, supervision needed in assisting the job, working condition, and management/employee interaction (social). Human resources function commonly used this approach in several process such as recruitment process, performance appraisal, salaries and incentives allocation, and training and development. In recruiting process, it helps them to organize and target applicants who are qualified for the job. While in training and development process, this tools used for development of human resources that already own by an organization, job analysis approach helps them to analyze the skill gap that later on can be used as the suggestion for training programs. According to Quirin (2001), job analysis is an accurate recording of the activities involved in certain type of job. This like gathering many information regarding the whole information from a specific job attributes. The hierarchy of job analysis is shows in Figure 2.9 below.

Figure 2.9 Hierarchy of Job Analysis

(Source: Quirin, 2001)

As shown in Figure 2.9, the hierarchy of job analysis is divided into 8 stage where element represent the lowest level and career represent the highest level.

1. Element: smallest level of job details in which the work cannot be divided anymore, such as scanning picture.

2. Task: a distinct work activity carried out for a distinctive purpose. For example: preparing lecture, preparing letter, etc.

3. Duty: a number of tasks. The example of duty such as counseling student.

4. Position: Refer to one or more duties needed to perform by one person in an organization such as, individual employee can hold a position like Assistant Professor – Business Administration.

5. Job: is a type of position within the organization. An example of job is assistant Professor. In one organization, it is possible to have 25 assistant Professor, but the job is only one which is assistant Professor.

6. Job family: Group of two or more jobs that contains either similar characteristics or parallel work task. The example of job family is manager.

7. Occupation: Is a group of jobs found across the organization. Several examples of occupation are accountant, lift man, office boy etc.

8. Career: Is a sequence of positions, jobs, or occupations that own by a person in her/his whole life.

While, several methods that can be used as to conduct job analysis are observation, interview, questionnaires, diary, technical conference, and critical incident technique. If the methods used to analyze the job is observation, all of the activities involved in that job must be observable within a certain amount of time. Interview, methods requires that all of the employee or sample are asked the same questions in the same order. Interview can be both individually or in group. If the questionnaire used to analyze the job, then the questionnaire may overlook certain aspect of the job. Diary method used to record all of the information and a daily task of certain job into diaries. This method must be over a period of several weeks or months.

Job analysis is closely related to job description. Several informations that gathered on each job through job analysis is subsequently organized and compiled into job description. Job description itself is a written information obtain through the job analysis interview. Job description contains mainly about the duties and responsibilities for a certain job.

Besides assessing the organization based on their employee's job description, Harvey and Brown (1996) an evaluation can be done for each employee to their performance as well. A downsizing activity proposed by Harvey and Brown for the example of consensus-seeking activity aim to examine the interdependencies among the team maembers and to provide the insight into the comparison of decision made by the individuals with those made by the group. Several tables below show the example of forms that used in assessing the interdependencies of the employee.

Table 2.1 Executive Committee Decision Worksheet

Employee	Personal Ranking	Committee Ranking	Actual Performance Ranking	Individual Score	Team Score
Gwen					
Hal					
Carole					
Dave					
Toni					
etc.					
Total Scores					

Besides, the evaluation also done to see the interdependencies for each employee to each individual's ability. The assessment done for several abilities such as education, performance, seniority, technical ability, attitude, leadership, effectiveness, efficiency, job function, and social ability. From this assessment then the data related to the individual decision can be obtained. The total score then calculated by summing the score for ability assessment. From both executive committee form and individual decision form then two assessment score can be obtained which are individual rating and team rating.

Table 2.2 Individual Decision Work Sheet

Employee	Department	Education	Performance	Seniority	Technical Ability	Attitude	Leadership	Effectiveness	Efficiency	Job Function	Social Ability	Total score
Gwen	Finance											
Hal	Finance											
Carole	Marketing											
Dave	Personal											
Tony	Marketing											
etc.												

Table 2.3 Values Survey Form Evaluation

Values	Individual Rating	Team Rating
High Productivity		
Effective Relationship		
Seniority		
Time Consiousness		
Positive Attitudes		
etc.		

Commonly, an organization already has a documented job analysis and job description for all of the functional position or even individual employee. This document is necessary as it is descripbe each function and duties. However, the usage of technology such as computer as an IT based equipment that correlated directly with the job analysis is rarely happen in organization. Meanwhile, a suitable technology is an important factor that needs to be considered as it can lead to technology gap. Technology gap itself can affect the productivity and the performance of the user. Over specification of computer technology will lead to under utlize computer and waste of budget. While under specification of computer specification can lead to inefficient work.

2.4   Computer Technology Requirement Analysis based on Workload

Computer technology needs analysis is a process used for determine the best suitable technology of computer based on the workload and main function that hold be certain function in an organization. This includes any specifications needed by each function in order to accomplish their task effectively and efficiently. This analysis becomes important to provide the best computer specification as over specification leads to waste of budget and under specification leads to ineffective and inefficient work.

2.4.1   Method for Technology Needs Analysis

According to Nosa (2015), there are 3 approaches that can be used to obtain the technology needs data.

1. Organizational Approach

    Organization here decipherable as the work system of the positions. Through the organizational approach several informations that need to obtained such as organizational structure, main duties and function of each position, responsibility of the position, working condition, and working environment.

2. Position Analysis Approach

    Position analysis used to identify any secondary activities charged into the computer in each function and position. Through this analysis it can be obtained several informations such as daily activities

put in charged for the computer, types of applications usually used, any complaint regarding the work of the computer, and any specific technology needed to support the duties.

3. Administrative Approach

This approach used to obtain any information regarding any regulation both from each SKPD or directly stated by the government. This approach is much closed relationship with the employee administrative system.

2.4.2   Classification Technique for Technology Needs Analysis

Several techniques used to classify the technology needs for every function and position in SKPD. It is used to classify the needs of technology in computer for every function and position. There are several techniques used to identify this technology.

2.4.2.1   Survey

The idea of survey is basically very simple. It involves identifying a specific group of people and collecting necessary information that from some of them, will be used to gain any insight regarding what the entire group does. According to the European Association of Methodology or EAM (2008), the word survey mostly used to describe a method of gathering any information from a sample of individuals. While Kraemer (1991) identified three distinguish characteristics of survey which are: quantitatively describe a certain aspect of a given population, the data obtain is subjective, and survey uses a selected portion from the population that later can be generalized back to the original population.

2.4.2.1.1   Survey Design

According to Glasow (2005), there are several process that need to be done in designing a survey research. First is sample selection, which depends on the population size, its homogeneity, and sample media. The people that selected to join the survey need to be taken randomly, which means that all of the member of

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population have an equal chance of being selected. Second is the choice of survey media, which is determined by the resource that available to conduct the survey itself. It can be chosen between written survey, verbal survey, or the combination between both of them.

2.4.2.1.2 Survey Instrument Development

Survey instrument must be preceded by several factors. First, the focus of the study must be carefully defined in the beginning. Second, the objective of the research must be translated into measureable factors. Third, the researcher must be well known regarding the topic. Lastly, the survey must be consistent. The instrument itself ideally should be developed by some experts, as it is becoming the critical part of a survey.

According to Glasgow (2005) there are several factors that needs to be considering as well are questions wording, feasibility and ethical, additional consideration, avoid biased words, avoid biased context and type of survey questions.

2.4.2.1.3 Survey Execution

Survey execution can be said as the use of survey instrument as well. Salant and Dillman (1994) emphasized that it is very important to maintain the confidentiality of individual response and only reporting the survey in aggregate. Another ethical concern is recognizing that the survey participation is voluntarily. Therefore, the researcher needs to encourage the participation of an individual without doing pressure or coercion. Glasgow (2005) also stated that before the real survey conducted thoroughly, a pilot survey need to be conducted in order to test both of the instrument of the survey and also the procedure of the survey.

The evaluation of the pilot survey can be conducted in two ways, which are focus group discussion and responses analysis in

order to ensure the consistency of the respondent characteristics across the question to the whole survey.

2.4.2.1.4 Data Analysis and Reporting Survey Results

Lastly, the data analysis and reporting survey results can be done. Isaac and Michael (1997) emphasized the use of automated data collection tools to facilitate data tabulation. And it is worthwhile to present the survey results in an effective presentation as it can be considered as a credible and successful survey.

2.4.2.2 Interview

Interview is an elaborate method that ideally used to measure the competency of a person through face to face talk and some observation under certain circumstances (Yuanxun, 2010). According to Lin (2010), In traditional interviews, several things that consent the most are job description, resumes, technical credentials, and some hypothetical questions. According to Lin (2010), there are advantages and problem that followed traditional interview method. Traditional interview is commonly used because it is easily understood by common people and people are comfortable with it. Mostly the questions is in the form of short answer. While the major problem that happen to the traditional interview is because it is too common that make every answer becomes cliché. Therefore, the interview in this research are prepared for deep interview with certain matter and very specific answer. Besides, the interview will be followed by several other techniques in order to confirm and match the answer such as survey, direct observation and expert judgement.

2.4.2.3 Expert Judgement

Judgements involves the weighing of available evidence and reaching a balanced conclusion from the evidence. Expert are bringing in to provides these judgements because they are considered to be experienced and have developed the mental needed to make a sound evaluation. According to

Hora (2009), when an expert judgement method is about to use for an analysis, there are several decisions that must be made regarding the process. These include selecting the issues to be addressed by the experts, selecting the expert itself, organizing the effort, and choosing a method for combining multiple judgement (if needed).

2.5   Standard Operating Procedure (SOP)

According to Environmental Protection Agency (2007), standard operating procedure or SOP is a set of written instructions that capturing a routine or repetitive activity in an organization. The implementation of SOPs can provide individuals with the information needed to perform a certain job properly. SOPs intended to describe and assist that organization can maintain their quality control and processes to ensure it compliance with the regulation implemented by the organization.

The implementation of SOP minimizes the variation and ensure consistency of a procedure within the organization even if there are a temporary or permanent employee changing. However, the implementation of SOPs can be failed if the SOPs are not written correctly or if it is not followed well by the individuals. Therefore, the use of SOPs needs to be reviewed and re-enforced by the management and more reliable with the direct supervisor.

2.5.1   SOP Process

SOP process contains of several steps from the preparation, review, revision, approval, and tracking.

1. SOP Preparation

As it is stated several benefits of using SOP, several activities or repetitive actions done within the organization that will be documented can be transform into SOP. However, SOP should be written with sufficient detail and information available so that someone with limited knowledge and experience regarding the procedure can successfully implement the procedure without any supervision.

2. SOP Review and Approval

After being prepared and made, SOP need to be validated by several people with appropriate experience with the process. It is also suggested that the SOP can be tested by someone other than the writer before finalized. Generally, the SOPs needs to be approved by the managerial level or the immediate supervisor.

3. Frequency of Revision and Review

SOPs itself needed to be renewed in order for the SOP to remain useful. Therefore, whenever a procedure or an activity related to certain procedure is change, then the SOP need to be modified. It is suggested that SOP may be reviewed in regular basis such as 1-2 years in order to ensure that the SOP still related to the current condition and environment.

4. SOP Document Tracking and Archival

Above all SOPs, the organization need to maintain a master of all SOPs exist within the organization. The file of each SOP need wo indicate several important information such as SOP number, version number, date of issuance, title, author, status, organizational division or branch or section and many other important information that can be added ino the SOP along with the necessity of the organization.

2.5.2   SOP General Format

SOP need to be organized to ensure ease and efficiency during the implementation of the SOPs. There is no correct format related to the SOP. The organizations can make their own internal format of SOP in order to make it compliance with the necessity of the organization. The organization can also make it detail and specific related to one department, section or division or make it general that it can be used across department as well. However, according to environmental protection agency (2007), a generalized format contains several informations such as title page which is the cover page of each SOP that clearly identifies the activities represent by the SOP. Several information attaches to the title page such as the identification number of SOP, department/section/branch/division that issued the SOP, date of issuance, and signature. Another format of SOP ased on EPA is text.

EPA stated that well-written SOPs should first briefly describe the purpose of the process or activities. It is also needs to define specialized or unusual term that used within the SOP.

2.6   Technology Assessment

Technology assessment is relatively new and innovative concept which offers opportunities for improved public policy and decisionmaking (Arnstein, 1977). However, it also poses an obstacle like any others new concept does. Despite the initially concept of technology assessment, many people thought that technology assessment is somehow synonymous to other technology-related studies such as, technological forecasting, clinical trials, engineering feasibility, cost benefit or cost effectiveness. Over a widespread confusion related to the technology assessment, one term is articulated by National Science Foundation (NSF). According to Arnstein (1977), technology assessment is a class of policy studies which systematically examines the effect on society that may occur when a technology is introduced, extended, or modified with special emphasis on those consequences that are unintended.

The increasing of public awareness related to te rate of social change and the role of technological change has provoked the widespread demand to improve the mechanism in technology control and assessment. The special appeal from technology assessment is that technology assessment provides an early warning based on the systematic evaluation. Eventough, the most thorough technology assessment cannot possibly anticipate all of the future societal problems but the existence of technology assessment has made the anticipation becomes possible.

In the middle of the emerging technology assessment studies, the objecives of a total enterprise technology assessment in order to maximize the ability of the enterprise to deal with the future technology (Cardullo, 1998). This condition triggers the enterprise to standa out with their technology assessment roadmap in order to face the higher profitability. According to Cardullo (1998), a Total Enterprise Technology Assessment (TETA) consist of four phases that need to be done in technology assessment. The first phase is the technological audit. The second one is the technology plan development. The third phase is the technology

plan implementation and the last phase is the technological audit after the implementation.

Another studies by Sokovic (2010), shows that PDCA or Plan-Do-Check-Action cycle can be used to do technology assessment as well. However, this type of evaluation is the typical continouse improvement in a central process, the actual results of an action are compared with a target or a set point. The difference between the two then corrected if the disparity becomes large.

2.7 Summary of Previous Researches

This part explains the previous researches which using the same method as it is used in this research. There are 5 research that summarized in this subchapter. As it shown in Table 2.1 3 out of 5 research were published in 2015. One research published in 2013, and another one published in 2012. One of the research concerns about job analysis, while the rest of the research concern about technology assessment using technometric approach. Technometric approach is a technology assessment approach that considering four factors which are humanware, technoware, inforware, and orgaware (Myrza, 2015). The assessment done to all of this factors in order to find the Technology Contribution Coefficient (TCC). The higher the TCC of a factor the higher the contribution level from that factor. In the other 4 research in this subchapter the difference from each research located in the criterion selection tools. Several tools used in those research are Analytical Network Process (ANP), Analytic Hierarchy Process (AHP), and Data Envelopment Analysis (DEA). All of this research related to technology management summarized in this subchapter, concern about technometric assessment using TCC formula. However, none of this research using matrix or to assess the technology within the organization, and none of this research highlighting about specific IT based equipment which influenced directly by the technology.

Table 2.1 Summary of Previous Research

Parameter	Previous Research		
Year	2015	2015	2012
Type	Bachelor Degree Research	Bachelor Degree Research	-
Author	Firman Faqih Nosa	M. Myrza. A	Wahyu Susiho
Title	*Evaluasi Keselarasan Jabatan Karyawan dengan Perencanaan Strategis dan pengukuran Beban Kerja di Bidang Kesejahteraan Rakyat dan Aparatur Pemerintahan di BAPPEKO Surabaya*	*Analisis Kandungan Teknologi dengan Pendekatan Teknometrik dan Metode* Analytic Network Process (ANP) *pada Surabaya Plaza Hotel*	*Penilaian Teknologi untuk Menentukan Posisi Pesaing*
Object	SKPD Surabaya City Government	Surabaya Plaza Hotel	5 companies in Serang
Method	Workload Analysis, Work Smapling, Stopwatch Time Study	Analytic Network Process, Technometric, TCC	Analytic Heirarchy Process, TCC, Technometric, Data Envelopment Analysis
Output	Recapitulation of job description based on function, effective number of employee, annual workload, recommendation regarding the strategic objectives.	The biggest element that affecting the technology implementation is inforware, and the lowest impact caused by technoware. The improvement done by implement several inovations.	The biggest contribution for one company comes from organware, while the greatest contribution for others company comes from humanware.

Table 2.4 Summary of Previous Research (Cont')

Parameter	Previous Research	
Year	2015	2013
Type	Journal	Bachelor Degree Research
Author	Ida Giyanti	Windarti Listyarini
Title	*Penilaian Tingkat Kontribusi Teknologi pada Perusahaan Jasa menggunakan model Teknometrik*	*Pengukuran Humanware untuk Pengelolaan Kinerja Pegawwai pada PDAM Surya Sembada Kota Surabaya*
Object	A company in Surakarta	PDAM Surabaya
Method	Technology Contribution Coeficient (TCC)	Analytical Hierarchy Process, TCC, Technometric
Output	The TCC score for the company is 0.619. The highest contribution goes to humanware, then technoware, infoware, and the last is orgaware.	The coefficient is diver from one department with the other department. The research is already focused on humanware, therefore the recommendation is improving the capability by increasing initiative, knowledge sharing, communication, team work etc.

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CHAPTER III
RESEARCH METHODOLOGY

      This chapter explaining the phases used for the completion of the research. The deployment of the systematic scheme used in supporting the research is summarized in the flowchart as it is shown in Figure 3.1 and Figure 3.2.
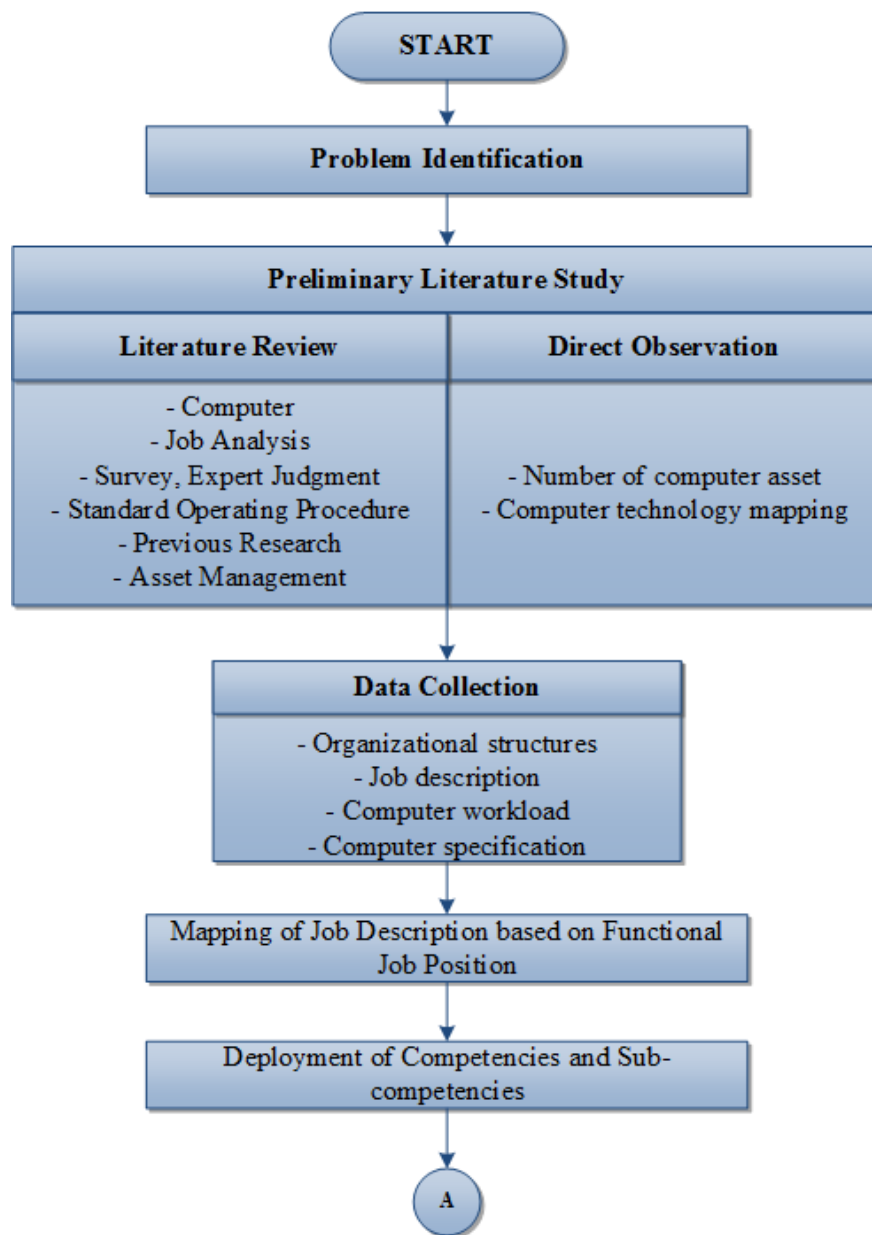
Figure 3.1 Research Methodology
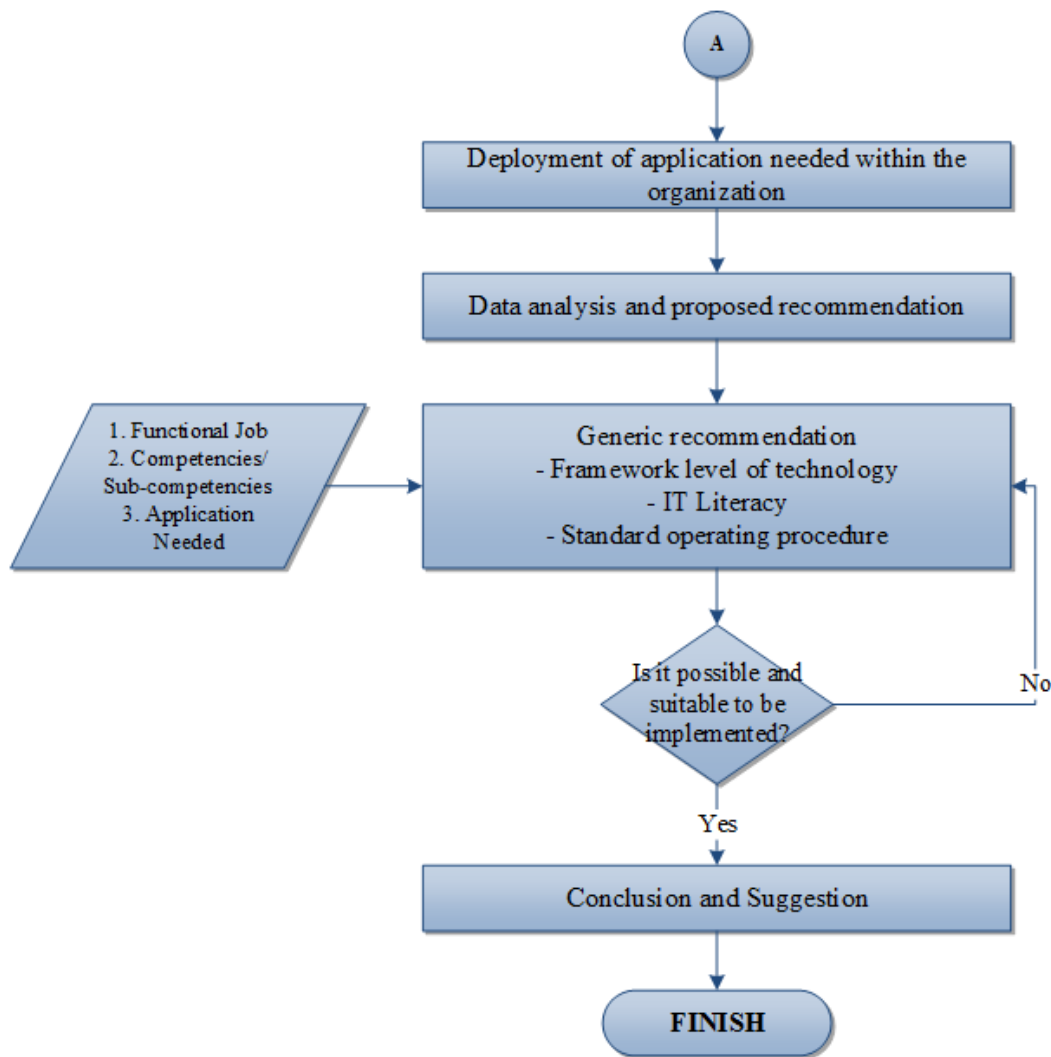
Figure 3.1 Research Methodology (Cont')

3.1 Preliminary Study

Preliminary study aimed to identify and formulate the existing problem in Procurement Unit of Surabaya city government. This phase consists of two main activities which are direct observation and literature review.

3.1.1 Direct observation

Direct observation was done by conducting an interview and direct observation in SKPD. The direct observation use survey as the method in order to obtain the number of computer asset in chosen SKPD and the mapping of

technology for each individuals. This method also used to obtain the real number of computer asset as the data that available in SIMBADA do not reliable.

An interview to the asset manager in every SKPD also conducted in order to answer hypothetical questions such as the sufficiency of computer asset in term of quantity and quality. Quantity means that the number of computer available in SKPD right now is sufficient to accommodate all of the employee. In term of quality means the technology carried by the computer for each employee, whether it is best suited with their requirement for accomplish the task or not.

3.1.2 Literature review

Literature review is conducted to collect any relevant information and gain inside knowledge regarding the existing problem in order to support the research. Several informations obtain from the literature review related to several topics such as E-government system, computer unit, job analysis, job description, survey, interview, questionnaire, standard operating procedure, and previous research that already done with similar topics.

3.2 Data Collection

Data collection stage shows the process of data collecting method for both primary and secondary data. Primary data that need to be obtain during the data collection method is organizational structure of the SKPD and the function and responsibilities based on each position. This can be obtained directly by asking to the managerial level in SKPD and doing literature review related to policies from Surabaya city government.

The secondary data that needed for the research are computer workload and computer specification based on the position. Computer workload is stated as the secondary data because the data will be obtained through direct interview to the user of the computer and direct observation regarding the user behavior. While computer specification requirement based on position obtained by doing an interview to each user. This interview will include a question such as the requirement needed for accomplish the task efficiently and effectively. Another Question in this stage include the question regarding any complaint happen to the computer during its service life.

3.3   Data Analysis and Proposed Recommendation

The data analysis and interpretation stage consist of the discussion regarding the result of the data that already proceed in the previous section. In this discussion it will be explain the result of the comparison between the available technology and the requirement needed. It can be discussed whether the quality already enough or need improvement and technology update. This stage will analyze several attributes that needs to be consider in buying new computer for certain SKPD. If any additional number of computer asset need to be made, it can be correlated with the specification needed in order to minimize over technology or under technology. As over technology lead to more budget and under technology lead to inefficient and ineffective work.

3.4   Data Processing and Tabulation

Data processing and tabulation include all of the process used in order to arrange the data that already collected into meaningful information. There are several process that goes under data processing and tabulation. Those process include Identification of organizational structures, deployment of competencies and sub-competencies, deployment of application needed within the organization, framework construction, and compare of existing technology and requirement.

Using the input that already obtained from data collection stage, several information will be generated in this stage. First, the identification of human resources available in SKPD based on function. It contains the information of organizational structure in SKPD from the top management level until administration level. Then, mapping of job description based on each position need to be done by gathered the function based on the similarity of their duties. This will result in information that shown the job description and responsibilities that allocated to each employee in each function and position. Second is the deployment of competencies or sub-competencies. This is used to identify any competencies and sub-competencies needed by all of the available position within the organization. Sub-competency here is a flexible option, the deployment in the organization can be done further until sub-competencies or it can be done only until

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the deployment of competencies based on the requirement from the organization itself. Next stage is the deployment of application needed within the organization. These application is not only application used by the administration or managerial level, but the whole application needed in the organization in order to support the competencies or sub-competencies. Application information is gathered as the symbol of the application workload allocated to each functional position, which becomes an indicator of the technology requirement for each functional position.

Using all of the information obtained such as functional position, competencies or sub-competencies and application needed, then a framework is developed in order to draw the map of required technology for each functional position that already considering the workload of the position. Then, the existing condition regrading the computer asset management in term of technology compared to the generic recommendation regarding the computer asset management in term of technology. The comparison done on order to analyze the gap between the existing condition and the ideal condition. This gap then used to propose several generic recommendations related to the computer asset management especially in term of technology mapping.

3.5 Conclusion and Suggestion

The next stage of the research is the formulation of research conclusion. The conclusion is formulated by recall the objectives that want to be achieved which are deployed in preliminary stage of the research. Aside from the formulation of research conclusion, a research suggestion needed to be formulated as well. This suggestion not only addressed to the Surabaya city government regarding the asset management, but also addressed to the future research that can be done in order to develop a further understanding.

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CHAPTER IV
EXPOSING CURRENT CONDITION

This chapter expose the existing condition happen in SKPD especially BAPPEKO. Several problems that can be highlighted during the investigation in SKPD. Besides, this chapter will also explain the computer-related problem that can be projected using the result of questionnaire distributed to the computer user in BAPPEKO.

4.1 *Badan Perencanaan dan Pembangunan Kota Surabaya* (BAPPEKO Surabaya)

Badan Perencanaan dan Pembangunan Kota Surabaya (BAPPEKO) or can be state as the Surabaya Urban Planning and City Development Agency is one organization in Surabaya city government that play an important role as a planner responsible for executing, coordinating, controlling, and evaluating any tasks and duties regarding the development of the city. BAPPEKO also responsible to arrange the stages for allocating any resources in order to increase the welfare of the citizen. BAPPEKO prepare urban planning and spatial information through the usage of map, so that the urban planning and city development can be execute based on the spatial data. Several function carried out by BAPPEKO are:

1. Formulating the planning technical policy;
2. Coordinating the development planning;
3. Coaching and executing any tasks related to the field of development planning;
4. Administrative management;
5. Implementing any other tasks given in accordance with the duties and function

In carrying out those duties and functions, BAPPEKO use the legal basis as it is stated in the Surabaya Regional Regulation No.8 years of 2008 regarding the regional organization and City Mayor Regulation no.55 year of 2011 concerning the duties and functions details of Surabaya Planning and Development Agency.

4.1.1 Vision and Mission

Vision and mission is an important factor that define the strategic objectives of an organization. The vision carried out by BAPPEKO is:

"Participative, Innovative and Better Quality of Planning towards a Better Surabaya"

This vision statement aimed to make BAPPEKO as one of the professional agency in term of respond to public aspirations with regard to applicable law and in accordance with the globalization to produce transparent, accountable and participative urban planning to support the realization of Surabaya Smart and Caring.

In support for the vision, the mission that carried out by Surabaya Urban Planning and City Development Agency is improving the quality of implementation and control system for regional development planning. While the strategy that used by the Surabaya Urban Planning and City Development Agency is realizing the goal through achieving several objectives that have been set through backward integration and product development, and forward strategy and reinforcement strategy.

4.1.2   Organizational Structure of BAPPEKO

BAPPEKO lead by the head of BAPPEKO, under the head of BAPPEKO there is secretary that help the head of BAPPEKO to plan, execute, coordinate, and control the general administrative activities, employment, procurement, program planner, and budgeting. Under the secretary there are three sub-divisions which are sub-division of finance, sub-division of general and staffing and sub-division of preparation and work plan. Besides, there are three sections which are economic sections, public welfare and apparatus section, and physical and infrastructure section. In each of these section there are two sub-sections that support the function of the sections. Another function that that added to the organizational structure of BAPPEKO is "additional function" function. A special function will be added if there is a running project that need any functions or team that cannot be attach to the current organizational structure, then the project can have its own team in order to support the implementation of the project itself. The diagram of the organizational structure shows in Figure 4.1 as follows.
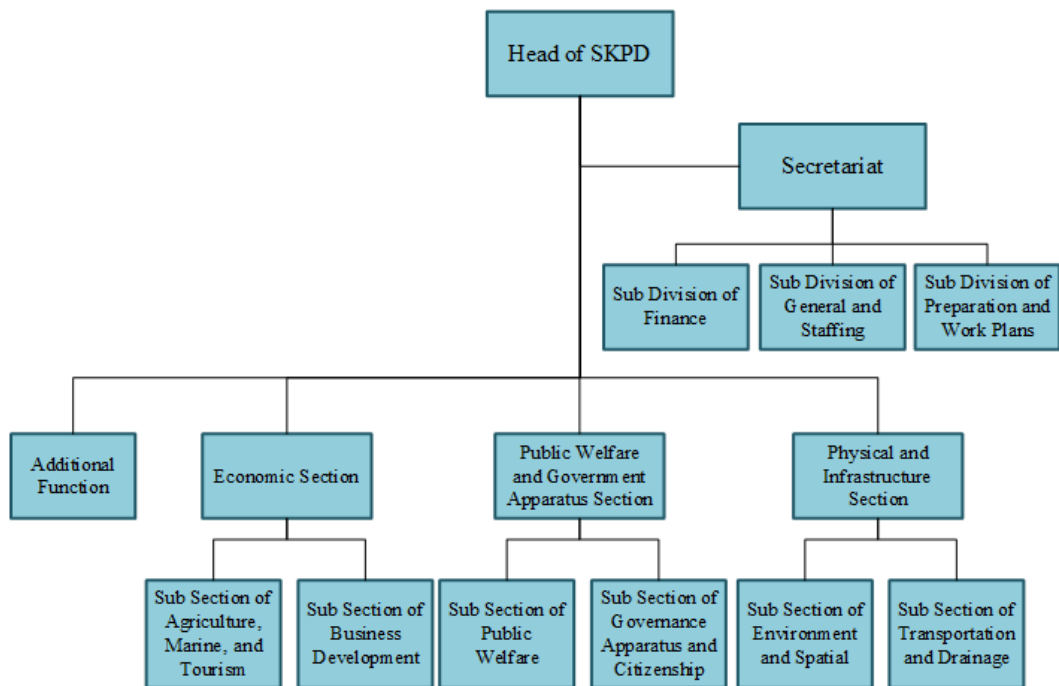
Figure 4.1 Organizational Structure of BAPPEKO

Each position has a function as it is explaining in city mayor regulation number 55 years of 2011. The difference in function lead to different number of staff allocated to each sub-division and section. The difference of the function for each position have to be considered as one of the input in considering the computer or any work-supporting tools allocated to the position.

4.1.3   Function of Secretary, Sub-division, Section and Sub-section

Along with the organizational structure own by BAPPEKO, each of the sub-division, section and sub-section has their own function in order to support the role of BAPPEKO within Surabaya city government. Based on City Mayor Regulation or *Peraturan Walikota* (PERWALI) 55 years of 2011 the functions are deployed as follows.

4.1.3.1 Secretary

Secretary in general is responsible for planning, executing, coordinating, and controlling the general administrative activities, employment, procurement, program planner, and budgeting. However, based

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on the regulations there are 21 functions hold by secretary as listed in Table 4.1.

Table 4.1 Functions of Secretary

No	Function of Secretary
1	Coordinating the execution of program planning, budgeting, and section report
2	Executing the organizational training and administration
3	Managing the staffing administration
4	Managing the correspondence, documentation, internal matter, and archive
5	Routine maintenance of building and office equipment
6	Managing public relationship and protocol
7	Executor of planning guidance coordination and urban development plan monitoring
8	Implementing the coordination of city development
9	Implementing the coordination of regional development
10	Coordinating the management guidance and area development in city scale
11	Coordinating the facility planning and urban development in city scale
12	Coordinating the facility technical guidance in districts development
13	Coordinating, monitoring and evaluating the implementation of city area and environmental management
14	Coordinating and facilitating the implementation of monitoring and evaluating the development of prioritize area and fast grow area
15	Coordinating, monitoring, and evaluating the compatibility of urban development
16	Coordinating, monitoring and evaluating the implementation of regional development management in the city scale

Table 4.1 Functions of Secretary (Cont')

17	Coordinating the establishment of policies and urban development strategy (refer to the national and provincial policy)
18	Coordinating and facilitating the arrangement of regional policy regarding urban development, norms, standard, procedure and criteria
19	Coordinating the preparation of long-term and medium-term urban infrastructure development with reference to the long-term development plan (RPJP) and medium-term development plan (RPJM)
20	Coordinating and facilitating the formulation and preparation of *Rencana Pembangunan Jangka Panjang* (RPJP) or long-term development plan and *Rencana Pembangunan Jangka Menengah* (RPJM) or medium-term development plan in self-help city housing (construction, restoration, improvement, expansion, maintenance and utilization).
21	Coordinating and facilitating the implementation of *Laporan Keteranga Pertanggung Jawaban* (LKPJ) or accountability report of city mayor.

In order to attain their functions secretary support by three divisions. First, is division of public and civil service, second is division of work plan, and third is division of finance. Each of these functions carried out their own functions that divided by the functional structure. All of the functions carried out by these sub-divisions can be seen in Table 4.2 to 4.4.

Table 4. 2 Functions of Public and Civil Division

No	Functions of Public and Civil Division
1	Prepare the program planning and technical guidelines in the area of employment

Table 4.2 Functions of Public and Civil Division (Cont')

No	Functions of Public and Civil Division
2	Prepare the coordination and cooperation materials with other institution in field of employment
3	Prepare any monitoring and controlling materials in field of employment
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

Table 4.3 Functions of Preparation and Work Plan Division

No	Functions of Preparation and Work Plan Division
1	Prepare any material and technical guides in term of work plan
2	Prepare the coordination and cooperation materials with other institution in field of work plan
3	Prepare any monitoring and controlling materials in field of work plan
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

Table 4.4 Functions of Finance Division

No	Functions of Finance Division
1	Prepare any material and technical guides in term of financial sector
2	Prepare the coordination and cooperation materials with other institution in field of financial sector
3	Prepare any monitoring and controlling materials in field of financial
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

4.1.3.2 Public Welfare and Government Apparatus

    Public welfare and government apparatus sections carried out 30 functions based on the city mayor regulations number 55 years of 2011. This sections responsible for urban planning in accordance to public welfare and government apparatus as it is shown in Table 4.5.

Table 4.5 Functions of Public Welfare and Government Apparatus Section

No	Functions of Public Welfare and Government Apparatus Section
1	Formulate the guidelines of regional development for public welfare and governance apparatus planning and control instruction
2	Coordinate the implementation of regional development in term of public welfare and governance apparatus
3	Develop a guidelines and standard of regional development planning in term of public welfare and governance apparatus
4	Coordinate the implementation of *Standar Pelayanan Minimal* (SPM) or minimum service standards
5	Coordinate the harmony of urban development planning
6	Monitoring the guideline implementation of harmonious urban areas development
7	Execute the coordination of planning, implementation and regional development in term of public welfare and governance apparatus
8	Execute the consultation of city scale regional development plan
9	Held a guidance, supervision and consultation of development cooperation between districts and private parties, domestic parties and foreign parties.
10	Assist the development of fast growing areas and prioritize areas
11	Monitor and evaluate the implementation of urban planning in term of public welfare and governance apparatus
12	Monitor and evaluate the development of local districts in term of public welfare and governance apparatus

Table 4.5 Functions of Public Welfare and Government Apparatus Section (Cont')

No	Functions of Public Welfare and Government Apparatus Section
13	Monitor and evaluate the implementation of cooperation between districts, private parties, domestic and foreign parties
14	Monitor and evaluate the implementation of urban environment management in term of public welfare and governance apparatus
15	Monitor and evaluate the implementation of development plan in prioritize and fast growing area in term of public welfare and governance apparatus
16	Monitor and evaluate the harmonious or urban development plan with the public welfare and governance apparatus
17	Support the implementation of basic social and prosperity statistics
18	Support the implementation of census in term of social and public welfare
19	Support the implementation of national survey at municipal level in economics and welfare
20	Support the implementation of social survey and economics
21	Support the implementation of statistical data collection in social and welfare
22	Develop statistical network in term of social and welfare
23	Formulate the policies and strategies for urban development in city area in term of public welfare and governance apparatus (referring to national and provincial policy)
24	Formulate local regulations regarding urban development based on norm, standard, procedure and criteria (NSPK) in term of public welfare and governance apparatus
25	Formulate urban development infrastructure plan for long-term and medium-term based on RPJP and RPJM

Table 4.5 Functions of Public Welfare and Government Apparatus Section
(Cont')

No	Functions of Public Welfare and Government Apparatus Section
26	Formulate and prepare the long-term and medium-term development plan regarding self-help housing (new construction, expansion, maintenance and utilization)
27	Research and development
28	Preparation of action plan regarding the capacity of the city
29	Planning, budgeting and implementation of service standards minimum (SPM)
30	Implement the guidelines and domestic accountability report of city mayor in term of public welfare and governance apparatus

This sections supported by two sub-sections, which are public welfare and government apparatus and demography with several function deployed as follows. Table 4.6 shows the functions of public and welfare subsection

Table 4.6 Functions of Public Welfare Subsection

No	Functions of Public Welfare Subsection
1	Prepare any material and technical guides in term of public welfare
2	Prepare the coordination and cooperation materials with other institution in field of public welfare
3	Prepare any monitoring and controlling materials in field of public welfare
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

Meanwhile, Table 4.7 shows the functions of government apparatus and demography subsection.

Table 4.7 Funcitons of Government Apparatus and Demography Subsection

No	Function of Government Apparatus and Demography Subsection
1	Prepare any material and technical guides in term of government apparatus and demography
2	Prepare the coordination and cooperation materials with other institution in field of government apparatus and demography
3	Prepare any monitoring and controlling materials in field of government apparatus and demography
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

4.1.3.3 Physical and Infrastructure

Physical and Infrastructure division which is responsible for the development in term of infrastructure carried out 31 functions. In general, the deployment of these functions is similar to those in public welfare and governance apparatus, but the focus of the deployment is on the different area which is infrastructure.

Table 4.8 Functions of Physical Infrastructure Section

No	Functions of Physical and Infrastructure Section
1	Prepare and implement development plan and control the regional development in term of infrastructure on city scale
2	Implement regional development plan for physical and infrastructure
3	Develop the standard guideline for development plan in the area of infrastructure
4	Implement the minimum service standard for the city
5	Formulate the guidelines for the implementation of city management and environmental management
6	Formulate the harmonious of urban development plan

Table 4.9 Functions of Physical and Infrastructure Section

No	Functions of Physical and Infrastructure Section
7	Coordinate and control the implementation of regional development plan for physical and infrastructure area
8	Implement the consultation and control role for regional development
9	Guide and supervise the implementation of coordination between districts, private parties, and local and foreign parties
10	Supervise the aptitude of the development plan
11	Plan the development of coastal area
12	Supervised the development of infrastructure in fast growing area
13	Monitor and evaluate the implementation of regional development in term of infrastructure
14	Develop the technical guidelines for infrastructure development in districts scale
15	Monitor and evaluate the development of infrastructure in districts scale
16	Monitor and evaluate the implementation of cooperation between districts, private parties, domestic and foreign parties
17	Monitor and evaluate he implementation of urban and environmental development in term of infrastructure
18	Monitor and evaluate the development of infrastructure in fast growing area
19	Monitor and evaluate the aptitude of urban development
20	Develop the policies and strategies for infrastructure development in urban area (referring to national and provincial policies)
21	Develop the regulations regarding urban development based on norms, Standards, Procedure and Criteria (NSPK) in term of infrastructure
22	Prepare the long-term and medium-term development plan

Table 4.9 Functions of Physical and Infrastructure Section (Cont')

No	Functions of Physical and Infrastructure Section
23	Formulate and prepare the long-term and medium-term infrastructure development plan regarding self-help housing (new construction, expansion, maintenance and utilization)
24	Research and development
25	Prepare the action plan for increasing the capacity of the city
26	Planning, budgeting and implement the Minimum Service Standards (SPM)
27	Formulate the housing development policies and strategies for city scale
28	Develop the development plan for strategic area
29	Formulate *Rencana Tata Ruang Wilayah Kota* (RTRWK) or spatial plan for the city, *Rencana Tata Ruang Kawasan* (RTRK) or spatial plan for strategic state and master plan for waste water infrastructure development
30	Develop the operational strategy for spatial plan of the city
31	Develop guideline for city mayor report in the area of infrastructure

Physical and infrastructure department also supported by two sub-sections in order to carry out their tasks and duties. First sub-section is environmental and spatial division and second sub-section is transportation and drainage.

Table 4.10 Functions Environmental and Spatial Subsection

No	Functions of Environmental and Spatial Subsection
1	Prepare any material and technical guides in term of environmental and spatial
2	Prepare the coordination and cooperation materials with other institution in field of environmental and spatial

Table 4.11 Functions Environmental and Spatial Subsection (Cont')

No	Functions of Environmental and Spatial Subsection
3	Prepare any monitoring and controlling materials in field of environmental and spatial
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

Table 4.11 Functions of Transportation and Drainage Subsection

No	Functions of Transportation and Drainage Subsection
1	Prepare any material and technical guides in term of transportation and drainage
2	Prepare the coordination and cooperation materials with other institution in field of transportation and drainage
3	Prepare any monitoring and controlling materials in field of transportation and drainage
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

4.1.3.4 Economics

Based on the city regulation number 55 years of 2011, Economic section responsible for 31 function related to economic area. The functions carried out by the economic sections is deployed as follows.

Table 4.12 Functions of Economics Section

No	Functions of Economics Section
1	Prepare and implement development plan and control the regional development in term of economics on city scale
2	Implement regional development plan for economic aspect
3	Develop the economic standard guideline for development plan

Table 4.13 Functions of Economics Section (Cont')

No	Functions of Economics Section
4	Implement the minimum service standard for the city
5	Formulate the aptitude of urban development plan
6	Coordinate and control the implementation of regional development plan for economic aspect
7	Implement the consultation and control role for regional development
8	Guide and supervise the implementation of coordination between districts, private parties, and local and foreign parties
9	Supervise the aptitude of the development plan
10	Supervised the development of infrastructure in fast growing area
11	Monitor and evaluate the implementation of regional development in term of economic
12	Develop the technical guidelines for economic development in districts scale
13	Monitor and evaluate the development of economic in districts area
14	Monitor and evaluate the implementation of cooperation between districts, private parties, domestic and foreign parties
15	Monitor and evaluate he implementation of urban and environmental development in term of aspect
16	Monitor and evaluate the development of economic in fast growing area
17	Monitor and evaluate the aptitude of urban development
18	Support the implementation of economic census for the city
19	Support the national survey at the municipal level for economic aspect
20	Support the social and economic census
21	Implement the sectoral statistics for economics aspect
22	Develop the statistical network for economic aspect

Table 4.13 Functions of Economics Section (Cont')

No	Functions of Economics Section
23	Develop the policies and strategies for economic development in urban area (referring to national and provincial policies)
24	Develop the regulations regarding urban development based on norms, Standards, Procedure and Criteria (NSPK) in term of infrastructure
25	Prepare the long-term and medium-term development plan based on RPJP and RPJM
26	Formulate and prepare the long-term and medium-term infrastructure development plan regarding self-help housing (new construction, expansion, maintenance and utilization)
27	Research and development
28	Prepare any action plan for increasing the capacity of the city
29	Coordinate the strategic plan for increasing the capacity of the city
30	Planning, budgeting and implement the Minimum Service Standards (SPM)
31	Develop guideline for city mayor report for economic aspect

In order to support those functions, economic section also deployed into two sub-sections which focus on two different areas. The sub-section is agriculture, marine and tourism and business development. Several tasks carried out by these sub-section listed on Table 4.14 and 4.15 below.

Table 4.13 Functions of Agriculture, Marine, and Tourism Subsection

No	Functions of Agriculture, Marine and Tourism Subsection
1	Prepare any material and technical guides in term of transportation and drainage
2	Prepare the coordination and cooperation materials with other institution in field of transportation and drainage

Table 4.14 Functions of Agriculture, Marine, and Tourism Subsection (Cont')

No	Functions of Agriculture, Marine and Tourism Subsection
3	Prepare any monitoring and controlling materials in field of transportation and drainage
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

Table 4.14 Functions of Business Development Subsection

No	Functions of Business Development Sub-section
1	Prepare any material and technical guides in term of transportation and drainage
2	Prepare the coordination and cooperation materials with other institution in field of transportation and drainage
3	Prepare any monitoring and controlling materials in field of transportation and drainage
4	Prepare any evaluation and task implementation materials
5	Carry out other tasks given by the secretary in accordance with the tasks and duties

4.1.4 Job Description Based on Function

Job description in each position shown the responsibilities and duties that need to be carried out by certain position (Quirin, 2012). Job description map the responsibilities based on the workload instead of map it through the organizational structure. However, through organizational structure, it can be identified what kind of job description that apparently same in each department. Due to the similarity of job description in division and section, therefore there is a deployment of job description based on the function.

Based on the functions that projected to division, section and sub-sections from the city mayor regulations number 55 years of 2011, BAPPEKO deployed

these responsible tasks need to be done by each function. From the deployment based on the duties order document number 800/3689/436.7.1/2015 which published on December, 30 2015 there are 8 positions in BAPPEKO. These positions deployed based on the similarity of tasks for each function.

Table 4.15 Functional Job Description: Secretary

Function		Task
Secretary	1	Plan, monitor and control any general administration activities related to employment, procurement, program planning and financial related matter within BAPPEKO and coordinate the strategic planning process for SKPD and city scale.
	2	Perform any other assignment and tasks given by the directions in accordance to its function.

Table 4.16 Functional Job Description: Head of Division and Section

Function		Task
Head of Division and Section	1	Formulate the regional regulations in term of development planning based on each sector.
	2	Monitor, control and evaluate the implementation of development planning in specific SKPD.
	3	Perform any other assignment and tasks given by the directions in accordance to its function.

Besides, head of division and section there is also head of sub-section as all of the section is divided into several subsections in order to support the job

description that llocated to each section. Therefore, head of section responsible for several subsections.

Table 4.17 Functional Job Description: Head of Subsection

Function	Task	
Head of Subsection	1	Prepare the final draft of the concept in term or strategic development along with the technical guidance for each sector.
	2	Coordinate, monitor and cooperate with any agency or institution for synchronize the program planning to the strategic planning in accordance to each sector.
	3	Perform the technical monitoring and controlling process regarding the implementation of the development plan in each sector.
	4	Prepare the statistical data for each development plan in each sector.
	5	Perform the evaluation process for the attainment of Key Performance Indicators (KPI) based on each sector.
	6	Responsible as the level 3 watchman under the head of section/division in accordance to each sector.
	7	Perform any other assignment and tasks given by the directions in accordance to its function.

Under the head of subsection, there commonly there are three types of staff which are, planner staff, monitoring, controlling and evaluation staff and administration staff. However, some section allocated a supporting staff that

sometimes work with the planner or mondalev (monitoring, controlling, and evaluation staff.

Table 4.18 Functional Job Description: Planner Staff

Function		Task
Planner staff	1	Prepare any material and concept development plan and actively involved in strategic planning activities for city scale based on the given SOP.
	2	Prepare any concept and material regarding the development plan and annual development plan for city scale,
	3	Cooperate with monitoring, controlling and evaluating staff for coordinate staff planner in SKPD for the formulation of strategic plan, work plan, and work plan and budget for each SKPD.
	4	Assist and ensure the quality of strategic or sectoral development planning done by the third parties in accordance to each sector.
	5	Perform as the second level watchman in development clinic.
	6	Perform any other assignment and tasks given by the directions in accordance to its function.

In one section usually there are 1 to 2 palnner staff. Generally, their responsibility is supervising the mondalev staff to do their job. Therefore, in one section, one planner staff can responsible for 3 to 4 mondalev staff. Planner staff can be said as one step higher than the mondalev staff. Therefore, the requirement needed in this position is also higher tha the mondalev staff. Planner staff also

responsible in transforming the data and any information from the mondalev staff and transform it into statistical or any report that will be brought to the higher management level.

Table 4.19 Functional Job Description: Staff for Monitoring, Controlling and Evaluating

Function		Task
Staff for monitoring, controlling and evaluating (Mondalev staff)	1	Actively involved in cooperation with planner staff regarding the formulation of strategic plan, work plan, and work plan and budget for each SKPD.
	2	Coordinate the development of performance contract by SKPD.
	3	Monitor and control the output and outcome of any activities.
	4	Evaluate the attainment of output and outcome of the activities as well as feedback for the next planning.
	5	Accumulate the statistical data of the development planning both from SKPD and sectoral literature review in each sector.
	6	Verified the data and entry the data to the development plan planning and controlling information system under the supervision of planner staff.
	7	Perform as level 1 watchman in development clinic.
	8	Perform any other assignment and tasks given by the directions in accordance to its function.

Table 4.20 Functional Job Description: Supporting Staff

Function		Task
Supporting Staff	1	Help the Mondalev staff in preparing any data needed by the planner staff.
	2	Help the administration process needed by the planner and Mondalev staff.
	3	Help the planner and Mondalev staff in doing survey and produce the report.
	4	Perform any other assignment and tasks given by the directions in accordance to its function.

Table 4.21 Functional Job Description: Financial Staff

Function		Task
Financial Staff	1	Make the financial report
	2	Produce the financial report of SKPD
	3	Verified the financial responsibilities letter
	4	Produce the appealing payment letter for stock money (*Uang Persediaan),* replacement money *(Ganti Uang),* additional money *(Tambahan Uang),* and direct load *(Pembebanan Langsung)*
	5	Produce tax report
	6	Produce salary report
	7	Perform any other assignment and tasks given by the directions in accordance to its function.

Table 4.22 Functional Job Description: Administration Staff

	1	Manage the correspondence, documentation, household administration, archive and library, and manage the information system regarding development plan and monitoring process in BAPPEKO.
	2	Maintenance for building and office equipment.
	3	Help the management of staffing
Administration Staff	4	Help the preparation of any financial administration document.
	5	Manage the public relations including customer service and protocol.
	6	Responsible in administration process for service and equipment procurement with the third parties or self-procure in BAPPEKO.
	7	Perform any other assignment and tasks given by the directions in accordance to its function.

4.2   Existing Condition of Computer Asset Management in BAPPEKO

Existing condition of computer asset management in BAPPEKO explains the condition regarding how BAPPEKO manage their asset started from the procurement of computer asset, allocating computer asset to each position in order to support the workload of each user, maintenance of computer asset for both hardware and software, and also data recapitulation regarding the condition of the asset in order to support future procurement. However, the condition of computer asset management in BAPPEKO that can be conclude during the field observation highlighted that BAPPEKO still lack in several cases. One case that shows the lack of computer technology allocation can be seen in Figure 4.2 which is obtained from

the questionnaire that distributed to 70 people in BAPPEKO. It is shown that BAPPEKO still lack in computer deployment as.

4.2.1   Absence of Standard Operating Procedure for Proposing Computer Asset

First problem that can be highlighted during the field observation is the weakness of standard operating procedure used BAPPEKO. The standard operating procedure that used by BAPPEKO is only stated to be the general regulations from the city mayor without any written standard regarding the flow of the procedure or the element and supporting data required during the process. The current mechanism also does not include a review and checking mechanism regarding the suitability of the proposal. Current mechanism that used by BAPPEKO to purpose computer asset is the general regulation that used to proposed any asset. Therefore, there is no guidance that can be used as the standard in checking the condition of the computer as the consideration in accepting or refusing the proposal of new asset from each division, section, sub-section by the asset management staff.

4.2.2   Computer Allocation for each Position

Second problem also coming from the procurement process of computer asset. Asides, from the review and checking mechanism that absence from the standard operating procedure for proposing new computer asset, the next problem is the computer allocation to the employee in BAPPEKO. According to the function that already deployed by BAPPEKO from the function allocated by the city mayor, there are 8 function that deployed based on the similarity of the functions. Based on this explanation, it is clearly stated that among these function there will be a significant difference from one function to another. However, the asset management system implemented by BAPPEKO do not coping with this problem. Meanwhile, this problem becomes severe as the gap between function regarding the allocation of the computer begin to appear. Several tasks carried out by certain function shall be consider as one input in allocating the computer.

This gap can be detected as the employee with higher responsibilities in computer usage and application workload using a computer that has lower specification than the computer owns by the administration staff which is only used

for light application such Ms. Word, Ms. Excel, Ms. Visio, etc. The allocation of computer based on the function and task deployed to each employee becomes more urgent as this condition also affecting the productivity and also the efficiency from the employee itself. An intensive and high load programmer that used a low computer specification will be having much trouble in operating their computer as it is commonly slow respond or not responding. However, in the opposite, an administration staff that only dealing with light application and low intensity of usage which is allocated to use a high specification of computer can work really fast, but the utilization of the computer becomes low. Referring to the purpose of an organization where each part need to work together and build the system in order to achieve the objectives of the organization, of course this condition need to be fixed as only one function that working well without considering the other function.

According to the direct survey and questionnaire that distribute to all of the computer user in BAPPEKO, the mapping of computer allocation in BAPPEKO can be seen in Figure 4.2 below.
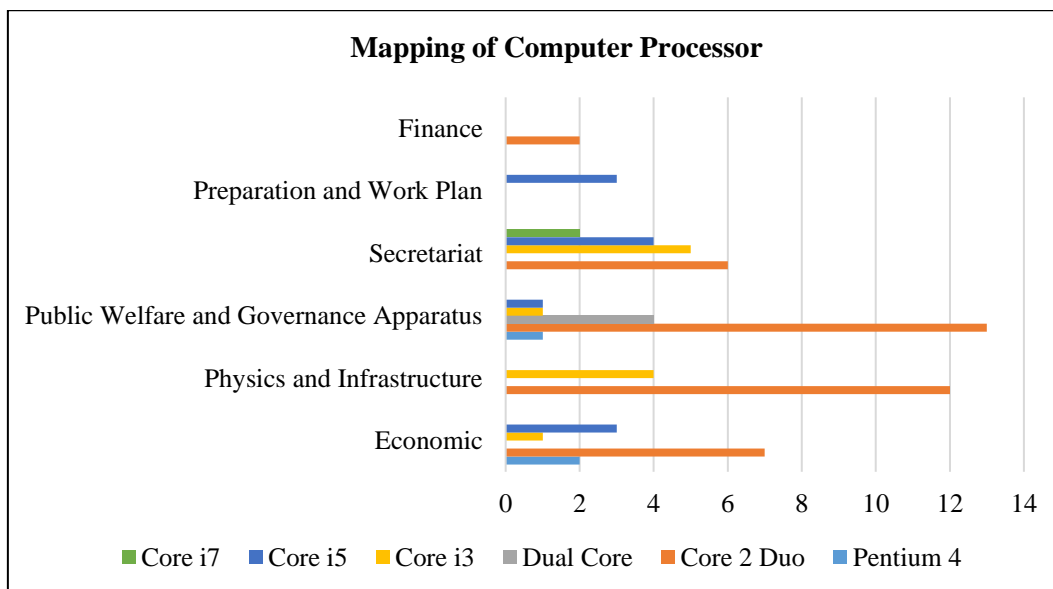
Figure 4.2 Mapping of Computer Processor in Each Divison or Section

As it is shown in the Figure 4.2 the highest number of processor that being used in BAPPEKO is still Core 2 Duo or a processor that has clock speed 2.66 GHz (Intel.com, 2016). Referring to the job and workload that need to be considered in

computer allocation, physics and infrastructure section that has a higher application workload rather than the other section need to be own a higher computer specification than the other section. However, the highest number of computer specification in physic and infrastructure is Core 2 Duo computer, while in economics section there several computers that already upgraded into Core i5. The absence of guidance regarding the computer allocation based on the workload of each computer user lead to the technology gap among the employee. This condition also leads to the number of computer request as several computers needed to be updated as well especially those own by the physics and infrastructure section. While in fact, the computer should be enough with a correct allocation regarding the technology attach in the computer itself.

4.2.3   Absence of General Maintenance

The third problem that can be captured from the assessment is the absence of general maintenance for both hardware and software. The general maintenance that done by the user of computer in BAPPEKO captured using the questionnaire that distributed to all of the computer user in BAPPEKO.
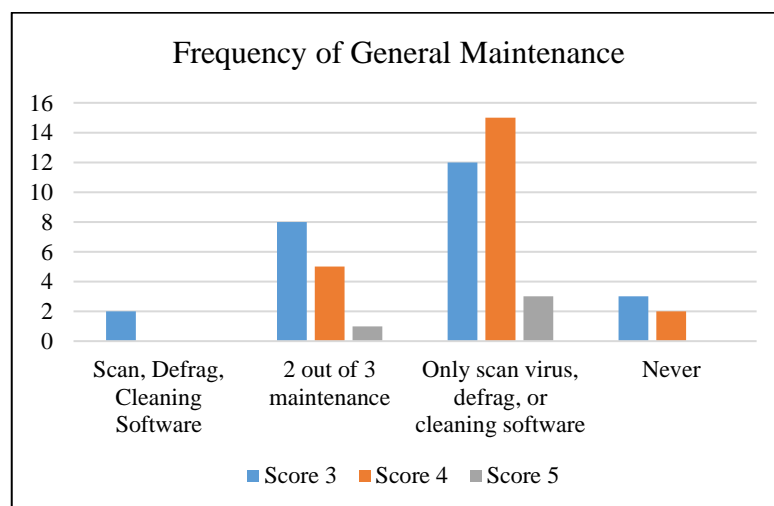
Figure 4.3 Frequency of General Maintenance done by Computer User

Figure 4.3 shown the frequency of general maintenance done by the computer user in BAPPEKO obtain from the questionnaire using likert scale. The complete recapitulation of the questionnaire can be seen in Appendix 4. Score 3

means that the user is somehow agree, score 4 means that the user is agree and score 5 means that the user is strongly agree regarding certain condition. In this case, the evaluation done in order to know the general maintenance that usually done by the user. There are three simple maintenances that being assess in the questionnaire which are virus scanning, disk defragment, and cleaning up useless software. As it can be seen in Figure 4.3 only 2 users out of 70 users doing three general maintenances. 8 users said somehow agree doing 2 out of 3 maintenances, which means sometimes they do it when they remember. 5 users agree in doing 2 out of three maintenances and only 1 user that strongly agree doing 2 out of 3 maintenances. The result also shown that 30 users said they only doing one maintenance which mostly is virus scanning, and 5 users said that they never did any general maintenance even the simplest one.

As one of the critical supporting tools in office, computer basically designed to be stronger and has a longer service life rather than notebook. However, in order to support the performance of the computer itself, a general maintenance need to be applied regularly. The absence of general maintenance by user leads to several problems in computer such as slow respond, not responding, corrupting files, filling out the disk with junk or virus files etc.

4.3   Computer Performance Assessment

User interview used to obtain several information from the user of each computer regarding several general problems that may happen to the computer that becomes a reason for disposing a computer and change with the new one with higher specification. Through the questionnaire that capturing the behavioral interaction between computer and the user, it can be used to analyzed the root cause of the general problem happen to the computer that usually used as the reason for disposing a computer. Assessment of the computer done by the user where the user of the computer gives an evaluation score to the performance of their computer. The score of the performance range from 1 to 5 where 1 means strongly disagree, 2 means disagree, 3 means somehow agree, 4 means agree and 5 means strongly agree. The design of the questionnaire can be seen in Appendix 1, and the complete recapitulation of the questionnaire can be seen in Appendix 1. Through this

questionnaire, several informations regarding the computer condition explains in several sub-chapters below.

4.3.1   Computer Usage

Easiness in computer usage captured the capabilities of the user in operating a computer. User knowledge in operating computer need to be captured as the interaction between the user and computer itself is influenced by the knowledge of the user. User with high knowledge in computer or technology tend to be more flexible and capable in handling their computer especially when a problem happens to the computer. However, a user with lower knowledge in computer or technology tend to be harder dealing with their computer if something happens or change from their computer.

Easiness in Computer Usage

7%
13%
33%
20%
27%

1 2 3 4 5
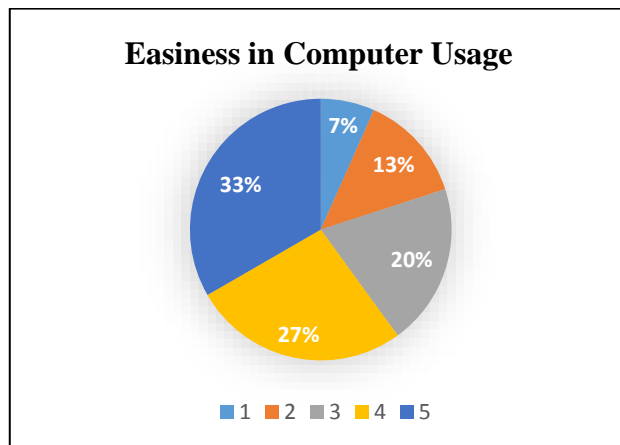
Figure 4.4 Percentage of Easiness in Operating Computer fro User Perspective in BAPPEKO

According to the Figure 4.4 80% of computer user in BAPPEKO said that their computer tends to be easy to use and 20% said that their computer is not user friendly or somehow hard to be cope with. In this condition, a further analysis need to be done in order to know the general problem that usually faced by the computer user in BAPPEKO, because a computer can be stated to be not user friendly first when the knowledge of the user is very low in operating computer or the computer is having several problems that makes it becomes not user friendly.

4.3.2   Computer Performance in Task Completion

Computer performance in task completion is one of the problem that captured during the questionnaire analysis. There are numbers of computer user stated that their computer is not well-performed in completing the tasks. They stated that their computer is running slower and slower. According to the questionnaire that distributed to the user of computer in BAPPEKO the result of this criterion shown in Figure 4.5 below.

Performance in Task Completion

6% 6%
21%
31%
36%

■1 ■2 ■3 ■4 ■5
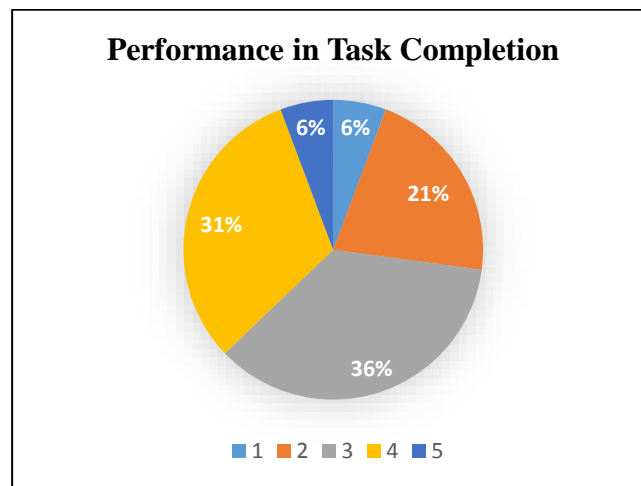
Figure 4.5 Percentage of Slow Respond Computer in BAPPEKO

Based on the Figure 4.5 36% of the computer user is strongly agree that their computer is regularly running slower than their usual performance. 31% of the computer user stated that they agree and 21% stated that somehow they are agreed. The capability of computer in responding command depend on the several factors. According to the interview with the technician, this problem can be caused by the internal factor or the external factor. First, the specification of the computer cannot cope with the technology install into the computer and the second possibility is that the computer is lack of maintenance from the user that makes the performance of the computer is decreasing from time to time. Basically, the performance of the computer will be decreasing from time to time until its worn out period. However, during the service life of the computer which is sometimes longer than the stated service life, the performance of the computer can be kept in its well-performance.

Therefore, several factors that considered as the supporting factor in causing this problem also captured through the questionnaire such as data saving frequency, frequency of cleaning up useless files, and general maintenance done by user. The graph shows the response from the user regarding the data saving frequency and frequency of cleaning up useless files as it can be seen in Figure 4.6 and 4.7 below.
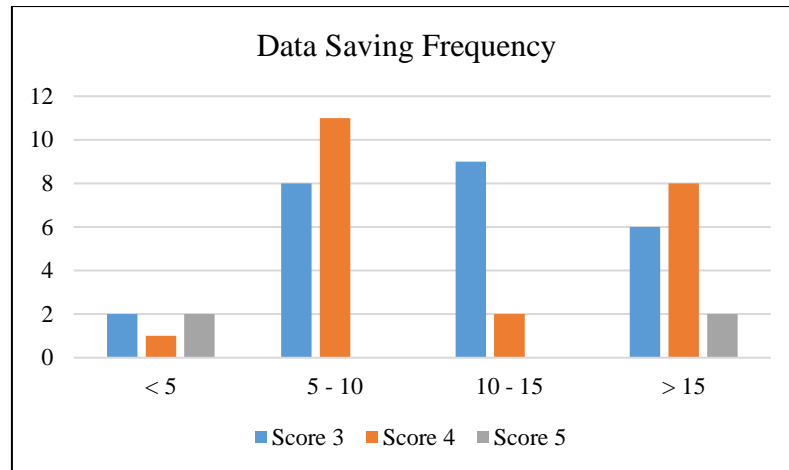
Figure 4.6 Chart of Data Saving Frequency by Computer User in BAPPEKO
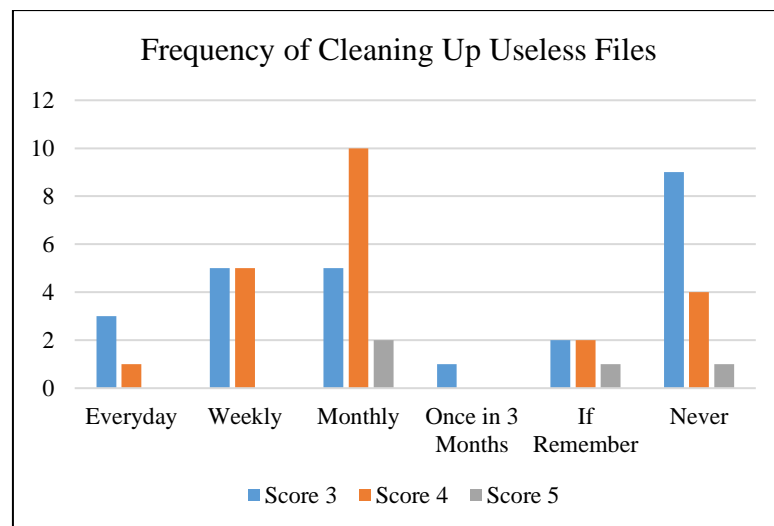
Figure 4.7 Frequency of Cleaning Up Useless Files by Computer User in BAPPEKO

The first and the second factor related to slow respond problem is data saving frequency and the frequency of cleaning up useless files. The Y axis shown

the number of user who gives a certain score for a certain range of data saving frequency. While the X axis shown the range of data saving per day. Lastly the color shown the classification of user who gives certain score which are blue for 3 which means somehow agree, orange for 4 which means agree to the condition, and grey for 5 which means strongly agree to the condition. Several user is saved more data in their computer rather than the other user. If the data stored in the computer is piles up for weeks, months, or even years, according to the technician, it is indeed affecting the performance of the computer. If too many file piles up, means reducing the storage of the computer. The decreasing of storage in computer affecting the condition of reading up and disk written time from the computer to open a storage. Therefore, when a user of computer has a high frequency of saving data in the computer, the user should frequently clean up their useless files as the simple maintenance to keep the performance of their computer.

The third factor is general maintenance done by the user. General maintenance done to prevent the possibility of several factors such as virus attack, bad sectors, etc. that caused the computer becoming slow in respond. Virus attack can be prevented by virus scanning and bad sectors can be prevented by disk defragment process. Therefore, the general maintenance done by the user becomes one important factor affecting the slow respond problem happen in the computer.

4.3.3   Computer Performance in Task Processing

Another problem captured during the questionnaire is the computer performance related to task processing. The effect of this problem sometimes becomes worse as the computer can not be restarted or shutdown. The percentage of user that strongly agree, agree, somehow agree, disagree, and strongly disagree to this problem shown in the pie chart in Figure 4.9 below. In total 71% of the respondent stated that they are agree that their computer sometimes is stop in processing to any command. Basically this condition is pretty similar to the computer performance in task completion, this problem also affected by several factors such as frequency of cleaning up useless files stated in Figure 4.7, frequency of general maintenance stated in Figure 4.3, and lastly the memory of the computer stated in Figure 4.9 below.

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Performance in Task Processing

6%
23%
38%
24%
9%

1 2 3 4 5
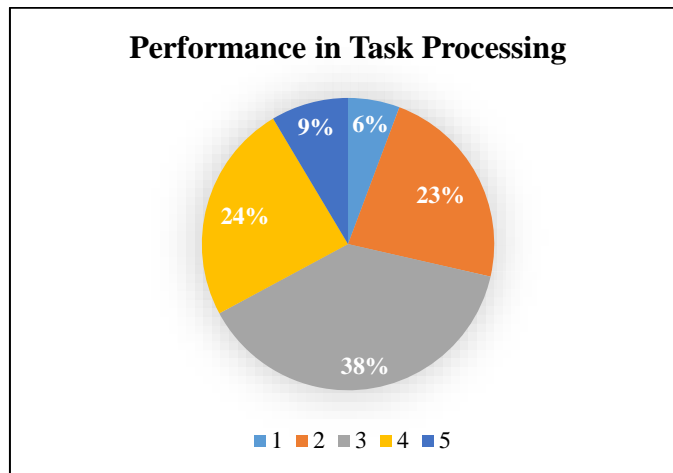
Figure 4.8 Percentage of Computer Asset that oftenly stop responding to any command

Memory Full

7% 6%
27%
31%
29%

1 2 3 4 5
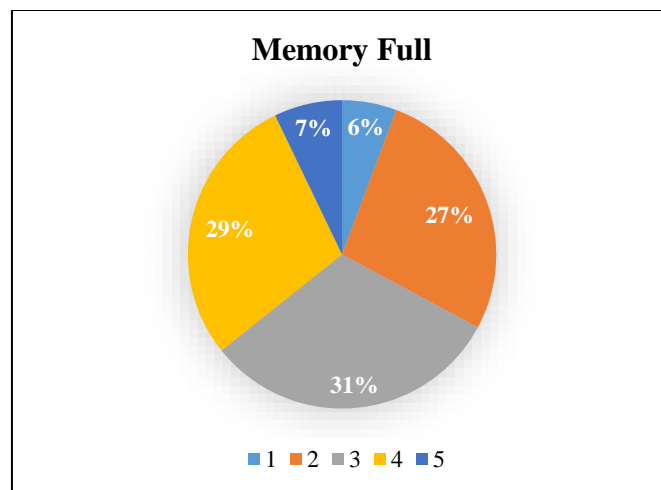
Figure 4.9 Percentage of Computer with Memory full in BAPPEKO

The condition of the memory in computer also, affected the performance of the computer. According to the technician, a computer with memory full commonly stop to respond to any command even if it is a simple command. This condition happens as a computer basically needed an extra space or memory in order to write a command on the disk. Therefore, memory full will affect the performance of the computer. According to the recapitulation of the questionnaire, 67% of the computer users in BAPPEKO said that their computer memory is full or almost full. This condition happens as the user keep saving files without cleaning up the useless files, the absence of a mechanism that allowed the user to spare their memory need

to be considered as one of general maintenance applied to the memory of the computer.

Going through several cases happened in BAPPEKO, it can be concluded that BAPPEKO still lack in some mechanism related to computer asset management system. Started from the procurement stage, allocation stage, and maintenance stage. The lack of several procedure and assesstment including technology assessment in procurement stage leads to a problem in allocation stage that triger the technology gap between each functional position and the technology allocated for each individual. BAPPEKO proposing several numbers of computer as they stated that they need more computer for their heavy duty employees that dealing with heavy application. However, the fact is that BAPPEKO already own several high performance computers such as core i3, core i5, and core i7, but these computers allocated to other position with lower level of workload. This conditions called as technology gap between each functional job position. BAPPEKO will not lack of computer if the allocation of the computer is correct and appropriate with the job description or workload of each functional job position.

CHAPTER V
ANALYSIS AND PROPOSED RECOMMENDATION

This chapter explains the analysis and the interpretation of the lack in computer asset management system in BAPPEKO that already explain in chapter IV. This chapter also explains about several recommendations that proposed in order to overcome the lack of the existing condition.

5.1 Computer Mapping in BAPPEKO

Computer mapping shows the allocation of computer in BAPPEKO. The mapping of the computer clustered based on the technology attach in the computer. The technology comparison use processor as the object. As it is shown in Figure 4.2 the mapping of computer in BAPPEKO shows that in most divisions and sections the common computer used by BAPPEKO is a computer with Core 2 Duo processor. However, Figure 4.2 also shows that sections with higher level of workload still allocated to have a Core 2 Duo computer but the other sections with lower workload already own a Core i5 computer.

While, referring to the Table 4.16 to Table 4.23 regarding the classification of the employee in BAPPEKO based on the similarity of the job, it is shown that the classification divided into 8 function which are secretary, head of division or section, head of sub-division or sub-section, planner staff, mondalev staff, planner supporting staff, finance staff, and administration staff. Each of these function is carried out different workload. Moreover, among the same level of function, different division or section will result in different workload related to technology requirement. Referring to the Table 4.16 to 4.23 that explain the function and task of each division and section, shows that there is also a different task for each division or section. According to the literature review based on the city mayor regulation, interview with the manager, and questionnaire review show that the level of workload related to the application used to support the tasks is pretty different. However, in the current condition there is no mechanism that accommodate this finding.

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A framework used to calculate and define the level of technology can be deployed from the application used in the SKPD itself. Using this matrix to assess BAPPEKO as it is shown in Figure 5.1, the highest level of technology requirement is planner staff for physics and infrastructure section. The second best is the mondalev staff for physic and infrastructure section. This can be happened as the physics and infrastructure section used several heavy software in order to support them to accomplish their duties and responsibilities.

The assessment using this framework in Table 5.1 to 5.2 done by giving a score to each functional position to each application list. There are two factors that considered in this framework which are the application workload of the job and the multitasking necessity. The weight for the application workload is 60% while the weight for multitasking necessity is 40%. This weight is obtained from theinterview that already done to 6 technician and computer expert in Hi-Tech Mall Surabaya. Hi-Tech mall itself is a shopping mall for electronics equipment located in Jl. Kusuma Bangsa Surabaya, East Java. The technician and the computer expert are stated that two important factors that generally becomes consideration for computer selection is the workload (application) that will be satisfied by the computer and also the nrequirement of multitasking thread for the job. The report related to each interview with each technician and computer expert can be seen in Appendix 5.

The final result of the matrix is calculating the remark for each functional job position. This remark shows the level of technology for each functional position. The higher the remark the higher the technology needed for those functional position. The technology needed here means the level of computer specifications.

Table 5.1 Technology Assessment in BAPPEKO

| Function | Application Workload 50% | | | | | | | | | | | | | | | | | | | | | | | Multitasking 50% |
| | Light Application 20% | | | | | | | | | | Medium Application 30% | | | | | | Heavy Application 50% | | | | | | | |
	Ms. Word	Ms. Excel	Ms. Power Point	Ms. Access	Ms. Visio	Ms. Project	Ms. OneNote	Expert Choice	Google Drive	Dropbox	SPSS	Minitab	Mathlab	Paradox	SAP	Google Earth	AutoCAD	3Ds Max	Google Sketch Up	Corel Draw	Adobe Photoshop	Fusion	ArcGIS	
Head of SKPD	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Secretary	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of General and Staffing	5	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Finance	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Preparations and Work Plan	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Public Welfare and Governance Apparatus Section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Physical and Infrastructure Section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Economic Section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Public Welfare Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Governance Apparatus and Citizenship Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Environmental and Spatial Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Transportation and Drainage Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Agriculture, Marine and Tourism Sub-section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Business Development Sub-section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Planner Staff of Sub-division of Preparation and Work Plan	5	5	5	3	4	2	3	2	4	4	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Planner Staff of Public Welfare Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Planner Staff of Governance Apparatus and Citizenship Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Planner Staff of Environmental and Spatial Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	4	4	4	4	4	4	1	4
Planner Staff of Trabsportation and Drainage Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	4	4	4	4	4	4	1	4
Planner Staff of Agriculture, Marine and Tourism Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Planner Staff of Business Development	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Mondalev Staff of Sub-division of Preparation and Work Plan	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	1	1	1	1	1	1	1	3
Mondalev Staff of Public Welfare Sub-section	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	1	1	1	1	1	1	1	3
Mondalev Staff of Governance Apparatus and Citizenship Sub-section	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	1	1	1	1	1	1	1	3
Mondalev Staff of Environmental and Spatial Sub-section	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	4	4	4	4	4	4	1	3
Mondalev Staff of Trabsportation and Drainage Sub-section	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	4	4	4	4	4	4	1	3
Mondalev Staff of Agriculture, Marine and Tourism Sub-section	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	1	1	1	1	1	1	1	3
Mondalev Staff of Business Development	5	5	5	3	3	3	3	2	5	5	2	2	2	1	1	1	1	1	1	1	1	1	1	3
General Administration Staff	5	4	2	2	3	2	3	2	5	5	1	1	1	1	1	1	1	1	1	1	1	1	4	2
Procurement Administration Staff	5	4	2	2	3	2	3	2	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	2
Staffing Administration Staff	5	4	2	2	3	2	3	2	5	5	1	1	1	4	4	1	1	1	1	1	1	1	1	2
Finance Staff	5	5	2	2	3	2	3	2	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	2

*Scale		
1	Do not need the application	Running 2 application in one time
2	Sometimes need the application	Running 3 application in one time
3	Need the application with low intensity of usage	Running 4 application in one time
4	Need the application with medium intensity of usage	Running 5 application in one time
5	Need the application with high intensity of usage	Running > 5 application in one time

Table 5.1 Technology Assessment in BAPPEKO (cont')

Light Application		Medium Application		Heavy Application		Multitasking		Application Workload Score	Multitasking	Remark
Sum	**Score**	**Sum**	**Score**	**Sum**	**Score**	**Sum**	**Score**			
sum of light application score	*(Total score of light app/maximum score)*100%*	*sum of medium application score*	*(Total score of light app/maximum score)*100%*	*sum of heavy application score*	*(Total score of light app/maximum score)*100%*	*Sum of multitasking score*	*(Total score of multitasking/maximum score)*100%*	*Total Score of application workload*	*Total score for multitasking*	*(The hisghest the remark the highest the specification needed)*
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
31	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.242
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
29	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.238
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
30	0.12	6	0.06	7	0.10	1	0.20	0.14	0.10	0.240
37	0.15	12	0.12	7	0.10	4	0.80	0.18	0.40	0.584
39	0.16	12	0.12	7	0.10	4	0.80	0.19	0.40	0.588
39	0.16	12	0.12	7	0.10	4	0.80	0.19	0.40	0.588
39	0.16	15	0.15	25	0.36	4	0.80	0.33	0.40	0.732
39	0.16	15	0.15	25	0.36	4	0.80	0.33	0.40	0.732
39	0.16	12	0.12	7	0.10	4	0.80	0.19	0.40	0.588
39	0.16	12	0.12	7	0.10	4	0.80	0.19	0.40	0.588
39	0.16	9	0.09	7	0.10	3	0.60	0.17	0.30	0.473
39	0.16	9	0.09	7	0.10	3	0.60	0.17	0.30	0.473
39	0.16	9	0.09	7	0.10	3	0.60	0.17	0.30	0.473
39	0.16	12	0.12	25	0.36	3	0.60	0.32	0.30	0.617
39	0.16	12	0.12	25	0.36	3	0.60	0.32	0.30	0.617
39	0.16	9	0.09	7	0.10	3	0.60	0.17	0.30	0.473
39	0.16	9	0.09	7	0.10	3	0.60	0.17	0.30	0.473
33	0.13	6	0.06	10	0.14	2	0.40	0.17	0.20	0.367
33	0.13	6	0.06	7	0.10	2	0.40	0.15	0.20	0.346
33	0.13	12	0.12	7	0.10	2	0.40	0.18	0.20	0.376
34	0.14	6	0.06	7	0.10	2	0.40	0.15	0.20	0.348

Table 5.2 Computer Current Mapping versus Recommendation

No	Name	Division/Section	Function	Current Technology	Minimum Technology Required
1	Ardianti Oktora	Secretariat	Administration Staff	Core 2 Duo	Core 2 Duo
3	Ismawati	Secretariat	Administration Staff	Core 2 Duo	Core 2 Duo
4	Muhammad Irfan	Secretariat	Administration Staff	Core 2 Duo	Core 2 Duo
5	Kustiningsih	Secretariat	Administration Staff	Core 2 Duo	Core 2 Duo
10	Titis Ratih	Physics and Infrastructure	Administration Staff	Core 2 Duo	Core 2 Duo
11	Syamsul Arifin	Physics and Infrastructure	Administration Staff	Core 2 Duo	Core 2 Duo
13	Ika Marillu S	Physics and Infrastructure	Administration Staff	Core 2 Duo	Core 2 Duo
16	Chairina Okta	Physics and Infrastructure	Administration Staff	Core 2 Duo	Core 2 Duo
26	Astri Paratina Dewi	Secreatriat	Administration Staff	Core i3	Core i3
39	Catur Budi Utami	Public Welfare and Governance Apparatus	Administration Staff	Pentium 4	Core 2 Duo
45	Sumarno Hendrawan	Public Welfare and Governance Apparatus	Administration Staff	Core 2 Duo	Core 2 Duo
70	Cicik Herawati	Financial Staff	Financial Staff	Core 2 Duo	Core 2 Duo
47	Ivan Wijaya	Economic	Head of Business Development Sub-section	Core 2 Duo	Core i3
69	Akhmad Yusuf	Secretariat	Head of Finance Sub-division	Core i3	Core i3
46	Nani Pertiwi	Public Welfare	Head of Governance Apparatus and Citizenship Sub-section	Core i5	Core i3
6	Esty	Physics and Infrastructure	Mondalev Staff	Core i3	Core i3
7	M. Ali Rakhmadi	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3

No	Name	Division/Section	Function	Current Technology	Minimum Technology Required
8	Mochamad Syaiful Arif	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3
9	Andi A	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3
12	Harfandi	Physics and Infrastructure	Mondalev Staff	Core i3	Core i3
14	Kartika Dwi Paramitha	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3
15	Rio	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3
17	Pramuda Alif Firdausy	Physics and Infrastructure	Mondalev Staff	Core 2 Duo	Core i3
28	Eka Soelastri	Public Welfare	Mondalev Staff	Dual Core	Core i3
29	Anis Nur Samsiati	Public Welfare	Mondalev Staff	Core 2 Duo	Core i3
30	Karlina Winaryanti	Public Welfare and Governance Apparatus	Mondalev Staff	Core 2 Duo	Core i3
32	Reza Santa Pratiwi	Public Welfare and Governance Apparatus	Mondalev Staff	Intel Pentium Dual	Core i3
33	Eny Hartati Endrasari	Public Welfare and Governance Apparatus	Mondalev Staff	Core 2 Duo	Core i3
34	Luciana Utami Dewi	Public Welfare	Mondalev Staff	Core 2 Duo	Core i3
35	Iin Widiastutik	Public Welfare	Mondalev Staff	Core 2 Duo	Core i3
36	Mochammad Lutfi Yusuf	Public Welfare and Governance Apparatus	Mondalev Staff	Intel Core 2 Duo	Core i3
37	Ervy Puspitaningrum	Public Welfare and Governance Apparatus	Mondalev Staff	Core 2 Duo	Core i3
40	Ony Tri Prasetyo	Public Welfare	Mondalev Staff	Core i3	Core i3
41	Achmad Syarifudin	Public Welfare	Mondalev Staff	Dual Core	Core i3
48	Retno	Economic	Mondalev Staff	Core 2 Duo	Core i3
49	Siti Nurhasanah	Economic	Mondalev Staff	Pentium 4	Core i3

No	Name	Division/Section	Function	Current Technology	Minimum Technology Required
50	Ditha	Economic	Mondalev Staff	Core 2 Duo	Core i3
51	Nuralaili Mauliddah	Economic	Mondalev Staff	Pentium 4	Core i3
52	Antono	Economic	Mondalev Staff	Core 2 Duo	Core i3
53	Naratama Haryo Pamungkas	Economic	Mondalev Staff	Core i5	Core i3
54	Artininingsih	Economic	Mondalev Staff	Core i5	Core i3
55	Trivianty Sulistyarini	Economic	Mondalev Staff	Core i3	Core i3
56	Andi Fiksi	Economic	Mondalev Staff	Core i5	Core i3
60	Arum Safitri Rahayu	Physics and Infrastructure	Mondalev Staff	Core i3	Core i3
64	Ifrohah	Sub-division of Preparation and Work Plans	Mondalev Staff	Core i5	Core i3
67	Dhoni	Public Welfare	Mondalev Staff	Core 2 Duo	Core i3
68	Benny Iriawan	Economic	Mondalev Staff	Core 2 Duo	Core i3
2	Amirudin	Secretariat	Planner Staff	Core 2 Duo	Core i3
18	Hana Sagiastu Firdaus	Secretariat	Planner Staff	Core i5	Core i3
21	Bima Bella Permana	Secretariat	Planner Staff	Core i3	Core i3
25	Madin Putra	Secretariat	Planner Staff	Core i3	Core i3
27	Alvian Chanasal Mubbaroq	Secretariat	Planner Staff	Core i5	Core i3
31	Atika Hanum Sari	Public Welfare and Governance Apparatus	Planner Staff	Intel Core Duo	Core i3
43	Nina Anggreni	Public Welfare and Governance Apparatus	Planner Staff	Core 2 Duo	Core i3
44	Putri Perwira	Public Welfare	Planner Staff	Core 2 Duo	Core i3
58	Christian N A	Economic	Planner Staff	Core 2 Duo	Core i3
59	Myrna A Aditya	Physics and Infrastructure	Planner Staff	Core 2 Duo	Core i3

No	Name	Division/Section	Function	Current Technology	Minimum Technology Required
61	Putut D Widanto	Secretariat	Planner Staff	Core 2 Duo	Core i3
62	Dian Anggraini	Sub-division of Preparation and Work Plans	Planner Staff	Core i5	Core i3
63	Tiara Elfita	Sub-division of Preparation and Work Plans	Planner Staff	Core i5	Core i3
66	Beta	Physics and Infrastructure	Planner Staff	Core i3	Core i3
19	Ulfatul Bidayah	Secretariat	Planner Staff	Core i3	Core i3
20	Vera Maya Andini	Secretariat	Planner Staff	Core i7	Core i3
22	I Made Putra Darma Wijaya	Secretariat	Planner Staff	Core i5	Core i3
23	Leryan Dona Dony	Secretariat	Planner Staff	Core i7	Core i3
24	Qurrata A'yun	Secretariat	Planner Staff	Core i5	Core i3
38	Bagus Wahyu Purnomo	Public Welfare and Governance Apparatus	Planner Staff	Intel Pentium Dual	Core i3
57	Kuat Djoko Sambodo S.Sos	Economic	Planner Supporting Staff	Core 2 Duo	Core i3

Drawing a line from the expert judgement related to the level of technology that can be allocated for certain job, for the physics and infrastructure staff for both planner and mondalev should be allocated to have the highest technology own by the organization or with minimum standard of computer is core i3 with VGA. This decision based on the necessity of physics and infrastructure section in operating several heavy graphical software such as AutoCAD. Except this section such as other function and staff that do not dealing with any heavy application and intensive use of graphic tool can be allocated to have minimum technology of Core 2 Duo. However, in fact is that several staff in physics and infrastructure section still use a Core 2 Duo computer while other staff with lower application workload use a better technology attach in their computer. Using the matrix of level of technology as it is

shown in Table 5.1 it can reduce this gap of technology considering the workload of the function.

Then from Table 5.2 the red cell shown the underspecification employee while the orange cell shows the overspecification employee. Form this overview it can be seen that technology gap still happens in several positions. Few positions that required a standard level of technology get the latest computer technology. In the otherhand, few positions that required a highest computer technology still use the old technology own by the organizations. In term of number and technology, BAPPEKO already meet the requirement. However, the allocation of the computer is not yet considering the job description so that the technology gap still happens in BAPPEKO. Therefore, a mechanism that allowed the reallocation of the computer needs to be proposed in order to make the allocation properly. However, this recommendation can be made up to the condition of the organization as well. Several additional considerations can be made such as budget limitation, government policy limitations, etc.

5.2   Proposing new Computer Asset

Planning the number of computer asset that need to be renewed is one responsibility of computer asset management staff. All of the computer need coming from the division or section will be gathered in asset management staff. In the current condition there is no mechanism in re-check or review the condition of the asset before-hand. Moreover, there is no related form that used to state or at least give a little bit view regarding the condition of the existing asset. While this condition can lead to waste of budget, as in fact, not all of the asset that proposed to be renewed is actually need the new one. According to the questionnaire, several problems that usually complained by the user happen because of lack of computer deployment or lack of maintenance. Therefore, in proposing new computer asset, there is additional form that needed to be fulfilled by the user whose propose a new computer. This form captured the condition of the existing asset as the consideration in decided whether the asset is indeed need to be renewed. Besides, an additional review that done by the computer asset management staff in order to add more

consideration regarding the suitability of the asset to be renewed need to be done before the proposal delivered to procurement unit.

5.3 Allocation of Computer Asset in BAPPEKO

Computer allocation basically dealing with the allocation of the computer in SKPD. This research is concern about the allocation of the technology deployment in SKPD that should be related and considering the workload of the employees. This happen in order to reduce the number of unnecessary allocation to the SKPD and save more budget for the organization that can be allocated for other project. The absence of guidance and decision making consideration in computer allocation leads to several inappropriate allocations in SKPD. In several cases, an employee with lower technology workload own a higher technology than those employees with higher workload. This condition made several employees in higher technology workload complain about their computer's condition which leads to higher number of computer proposal. While, this condition is actually can be solved with correct allocation of computer. The higher the technology workload of a certain function the higher the computer technology needed to be allocated in that function.

Therefore, the allocation of the computer needs to consider the level of technology own by certain function. This can be generate using the matrix of technology level as it can be seen in Figure 5.1 and 5.2. Whenever a certain SKPD get a computer allocation or propose several renewals of computer asset, the allocation needs to consider the level of technology for the function. This will be useful in allocating certain computer for certain function based on the specification of the computer and the workload of the functions.

Related to the computer allocation in each function it also needs to allow downgrade mechanism. This mechanism proposes a scheme where a well-functioned computer which own by function with high level of technology can be downgraded or allocated to the function with low level of technology, while the higher function get the newest computer with higher technology. This mechanism help the even distribution of computer asset based on the workload on each position. Several benefits that can be taken by implementing this mechanism are to avoid

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unnecessary replacement, avoid technology gap based on the workload, reduce the number unnecessary replacement, and budget saving for the organization.

5.4 Maintenance of Computer Asset in BAPPEKO

According to the questionnaire that distributed to 70 computer users in BAPPEKO, several problems happen to the computer such as slow respond and oftenly not responding. Most of the users said that this condition makes their computers do not user friendly and slowing up their work. This condition then leads to the increasing number of computer asset request done by SKPD. However, according to the interview with computer expert and technician, slow respond and not responding can happen in any computer including the most advance one. However, both of this problem happen for various reasons and most of them is maintenance from the user itself.

Maintenance itself is divided into hardware maintenance and software maintenance. Both of these maintenances are important as computer is construct from hardware and software. In the current condition there is no standard or guidance related to computer maintenance. This leads to the high number of complaint regarding the computer problem. Therefore, based on the interview with several technicians and computer experts, there are several maintenances that can be done by general user. The existence of this maintenance can reduce the number of computer problems happen that stated to be slowing up the work of the employee. This condition will also reduce the numbers of complaint. Several maintenances that can be done such as virus scanning, deleting unnecessary files, deleting unnecessary software, and disk defragment.

Besides, hardware maintenance and software maintenance, a limitation in computer usage related to personal use needs to be stated clearly. Several personal use that left a lot of data in computer, or running a personal file with heavy duty that makes the performance of the computer decreasing significantlt. Therefore in order to maintain the performance of the computer, the limitations related to internal use needs to be made. So that the assessment of the computer workload only considers the work-related activities.

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CHAPTER VI
GENERIC RECOMMENDATION

This chapter explains several generic recommendations in order to create a better asset management to support the performance of the computer asset. The generic recommendation includes any recommendation started from computer asset planning, allocation, utilization and maintenance.

6.1 Proposing Computer Asset

Proposing computer asset is one of the important stage of in procurement process for computer asset. In the existing condition there is no standard operating procedure regarding the process of proposing new asset. This condition then leads to unclear policy in decided whether the asset is indeed already obsolete and need to be change with the new one, or the asset only need a maintenance. The absence of review mechanism for the proposal of new asset has increase the number of computer request.

6.1.1 Computer Level of Technology Assessment

Level of technology assessment is one instrument made to assess the suitability of the computer with the job description and responsibilities of the user who's allocated to have a specific computer. Assessment used to prevent the gap of technology, so that an employee with higher necessity of technology can be allocated to get the highest level of technology available in the organization. The assessment model used in this research is basically adopting the assessment method done by Harvey and Brown (1996) in their book "An Experiential Approach to Organization Development" fifth edition. In their book, Harvey and Brown develop several assessment matrices used to calculate the interdependencies of the employee to each capability. The assessment matrix used in this research s basically using the same framework with the one made by Harvey and Brown. However, the adoption goes along with modification and improvement in the framework, but in term of the concept the framework is basically the same.

The matrix consists of two big factor which are application workload and multitasking necessity. Application workload means the application used by the user to fulfill their responsibilities. Application workload divided into three types which are light application, medium application, and heavy application. Multitasking means the necessity of the user to open several applications in one time. An assessment then done to each position or job to the application workload and multitasking necessity. This matrix used to generate the score for each job or position regarding the necessity of computer technology for each job or position. The higher the score that generate by this matrix for certain job or position the higher the level of technology for those position. An excel calculation used to generate the score of technology level.

In developing the matrix to calculate the level of technology needed by each position or job, there are several steps needed to be done before creating assessment matrix. Several steps such as deploy the competencies needed for the organization, deploy the sub-competencies, and deploy the application needed based on each sub-competency needed to be done beforehand. Figure 6.1 below shown the flowchart regarding the steps or stages needed to be done in construct the matrix that will be used to calculate the level of technology.
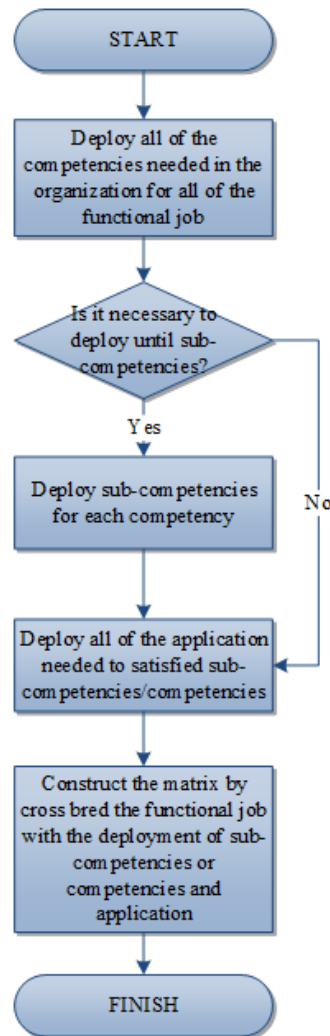
Figure 6.1 Flowchart in Construct the Technology Level Assessment

According to the flowchart in Figure 6.1 then the step by step construction for the matrix can be seen in Table 6.1 to 6.4. The first step that need to be done is deploy all of the competencies needed by the organization as it shown in Table 6.1.

Table 6.1 Competencies Deployment

Functional Job Structure	Competencies			
	Competency 1	**Competency 2**	**Competency 3**	**Competency 4**
Functional Job 1	1	1	1	1
Functional Job 2	0	1	1	1
Functional Job 3	0	1	1	1
Scale	1 = Need the competency/sub-competency			
	0 = Do not need the competency/sub-competency			

While table 6.2 shows the deployment of sub-competencies from each competencies. However, this step can be eliminated based on the organizations needs.

Table 6.2 Deployment of Subcompetencies

Functional Job Structure	Competencies									
	Competency 1			Competency 2		Competency 3		Competency 4		
	Sub-competency 1.1	Sub-competency 1.2	Sub-competency 1.3	Sub-competency 2.1	Sub-competency 2.2	Sub-competency 3.1	Sub-competency 3.2	Sub-competency 4.1	Sub-competency 4.2	Sub-competency 4.3
Functional Job 1	1	1	1	1	1	1	1	1	1	1
Functional Job 2	0	0	0	1	1	1	1	1	0	1
Functional Job 3	0	0	0	1	1	1	1	1	1	1
Scale	1 = Need the competency/sub-competency									
	0 = Do not need the competency/sub-competency									

The third step is construct application workload matrix. This matrix deployed from the competencies or sub-competencies matrix. Using the competencies or sub-competencies, any application that aimed to help each

competencies or sub-competencies are listed. Then all of the application gathered and clustered to eliminate application duplication and also clustering the application based on the light application, medium application and heavy application. In order to define which application comes in which cluster, it is recommended to have an expert judgment coming from technician or computer expert who have the capability related to computer or ICT knowledge. The matrix for this step shown in Table 6.3 below.

Table 6.3 Deployment of Application

Functional Job Position	Application Workload															
	Light Application					Medium Application						Heavy Application				
	Application 1	Application 2	Application 3	Application 4	Application 5	Application 1	Application 2	Application 3	Application 4	Application 5	Application 6	Application 1	Application 2	Application 3	Application 4	Application 5
Functional Job 1	4	3	4	1	2	1	1	1	1	1	1	1	1	1	1	1
Functional Job 2	4	4	4	1	2	1	1	1	1	1	1	1	1	1	1	1
Functional Job 3	5	4	4	1	2	1	1	1	1	1	1	1	1	1	1	1
*Scale																
1	*Do not need the application*															
2	*Sometimes need the application*															
3	*Need the application with low intensity of usage*															
4	*Need the application with medium intensity of usage*															
5	*Need the application with high intensity of usage*															

The assessment done by giving a score from 1 to 5 to each functional job to each application. The scale of the score can be taken from the scale as it is stated in Table 6.3.

The next step after assessing the application workload is assessing the multitasking needs for each functional job. Multitasking needs is the condition where the functional job needs to open more than one application in the same time during their work. The assessment for multitasking needs also done by giving a score to each functional job position. The score also scales from 1 to 5 as it is states in Table 6.4.

Table 6.4 Construction of Factors Assessment Matrix

Functional Job Position	Application Workload																Multitasking
	The application that used by each structural position to support their job																*Working condition that need the utilization of several application in one time*
	weight of application workload																*weight of multitasking*
	Light Application					Medium Application						Heavy Application					
	weight					*weight*						*weight*					
	Application 1	Application 2	Application 3	Application 4	Application 5	Application 1	Application 2	Application 3	Application 4	Application 5	Application 6	Application 1	Application 2	Application 3	Application 4	Application 5	
Functional Job 1	4	3	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Functional Job 2	4	4	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Functional Job 3	5	4	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1
*Scale																	
1	*Do not need the application*																*Running 2 application in one time*
2	*Sometimes need the application*																*Running 3 application in one time*
3	*Need the application with low intensity of usage*																*Running 4 application in one time*
4	*Need the application with medium intensity of usage*																*Running 5 application in one time*
5	*Need the application with high intensity of usage*																*Running > 5 application in one time*

As it is stated in general framework from Table 6.1 to 6.4 the implementation example of this framework in BAPPEKO step by step shown in Table 6.5 to 6.8 below. However, the complete assessment for BAPPEKO can be retrieve in Table 5.1 and 5.2 from the previous chapter.

Table 6.5 Example of Competencies Deployment in BAPPEKO

Functional Job Structure	Competencies							
	Business Planning	Business Development	Statistic Capabilities	Human Resources Management	Finance Management	Asset Management	Information & Communication Technology	Adminstration Management
Head of SKPD	1	1	1	1	1	1	1	1
Secretary	0	1	1	1	1	0	1	1
Head of Sub-division of Preparations and Work Plan	0	1	1	1	1	0	1	1
Head of Public Welfare and Governance Apparatus Section	0	1	1	1	1	0	1	1
Head of Economic Section	0	1	1	1	1	0	1	1
Head of Public Welfare Sub-section	0	1	1	1	0	0	1	1
Planner Staff of Business Development	0	1	1	0	0	0	1	1
Mondalev Staff of Business Development	0	1	1	0	0	0	1	1
General Administration Staff	0	1	1	0	0	0	1	1
Procurement Administration Staff	0	1	1	0	0	1	1	1
Staffing Administration Staff	0	1	1	1	0	0	0	1
Finance Staff	0	0	1	1	1	0	0	1
Scale	1 = Need the competency/sub-competency							
	0 = Do not need the competency/sub-competency							

Table 6.6 Example Subcompetencies Deployment in BAPPEKO

Functional Job Structure	Corporate Strategic Planning	Organization Structure Design	Economic Analysis	Business Process Analysis	Business Process	Operational Planning	Decision Management	Project Management	Basic Statistic	Statistical Analysis	Job Analysis	Man Power Planning	Performance management	Budgeting	Financial Planning	General Accounting	Financial Reporting	Procurement	Inventory Control	Warehousing	Asset Acquisition and Disposal	Software Infrastructure	Programming	Hardware Insfrastructure	Design Capabilities	Adminstration Management	Data/Record Management
Head of SKPD	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1
Secretary	0	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	0	0	1	1
Head of Sub-division of Preparations and Work Plan	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1
Head of Public Welfare and Governance Apparatus Section	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Head of Economic Section	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1
Head of Public Welfare Sub-section	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Planner Staff of Business Development	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Mondalev Staff of Business Development	0	0	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
General Administration Staff	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1
Procurement Administration Staff	0	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	1	1
Staffing Administration Staff	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Finance Staff	0	0	0	0	1	0	0	0	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	1	1

Competencies group headings: Business Planning (Economic Analysis, Business Process Analysis, Business Process, Operational Planning); Business Development (Decision Management, Project Management); Statistic Capabilities (Basic Statistic, Statistical Analysis); Human Resources Management (Job Analysis, Man Power Planning, Performance management); Finance Management (Budgeting, Financial Planning, General Accounting, Financial Reporting); Asset Management (Procurement, Inventory Control, Warehousing, Asset Acquisition and Disposal); Information & Communication Technology (Software Infrastructure, Programming, Hardware Insfrastructure, Design Capabilities); Administration Management (Administration Management, Data/Record Management).

Scale:
1 = Need the competency/sub-competency
0 = Do not need the competency/sub-competency

Table 6.7 Example of Application Deploymen in BAPPEKO

Functional Job Position	Application Workload																						
	Light Application										Medium Application						Heavy Application						
	Ms. Word	Ms. Excel	Ms. Power Point	Ms. Access	Ms. Visio	Ms. Project	Ms. OneNote	Expert Choice	Google Drive	Dropbox	SPSS	Minitab	Mathlab	Paradox	SAP	Google Earth	AutoCAD	3Ds Max	Google Sketch Up	Corel Draw	Adobe Photoshop	Fusion	ArcGIS
Head of SKPD	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
Secretary	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of General and Staffing	5	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Finance	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Preparations and Work Plan	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1
*Scale																							
1	Do not need the application																						
2	Sometimes need the application																						
3	Need the application with low intensity of usage																						
4	Need the application with medium intensity of usage																						
5	Need the application with high intensity of usage																						

Table 6.8 Example of Assessment Matrix in BAPPEKO

Functional Job Position	Application Workload																							Multitasking
	The application that used by each structural position to support their job																							*Working condition that need the utilization of several application in one time*
	50%																							50%
	Light Application										Medium Application						Heavy Application							
	20%										30%						50%							
	Ms. Word	Ms. Excel	Ms. Power Point	Ms. Access	Ms. Visio	Ms. Project	Ms. OneNote	Expert Choice	Google Drive	Dropbox	SPSS	Minitab	Mathlab	Paradox	SAP	Google Earth	AutoCAD	3Ds Max	Google Sketch Up	Corel Draw	Adobe Photoshop	Fusion	ArcGIS	
Head of SKPD	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Secretary	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of General and Staffing	5	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Finance	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Sub-division of Preparations and Work Plan	5	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Public Welfare and Governance Apparatus Section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Physical and Infrastructure Section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Economic Section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Public Welfare Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Governance Apparatus and Citizenship Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Environmental and Spatial Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Transportation and Drainage Sub-section	4	3	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Agriculture, Marine and Tourism Sub-section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Head of Business Development Sub-section	4	4	4	1	2	2	3	2	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Planner Staff of Sub-division of Preparation and Work Plan	5	5	5	3	4	2	3	2	4	4	3	3	3	1	1	1	1	1	1	1	1	1	1	4
Planner Staff of Public Welfare Sub-section	5	5	5	3	4	2	3	2	5	5	3	3	3	1	1	1	1	1	1	1	1	1	1	4
*Scale																								
1	*Do not need the application*																							*Running 2 application in one time*
2	*Sometimes need the application*																							*Running 3 application in one time*
3	*Need the application with low intensity of usage*																							*Running 4 application in one time*
4	*Need the application with medium intensity of usage*																							*Running 5 application in one time*
5	*Need the application with high intensity of usage*																							*Running > 5 application in one time*

The assessment of the technology level as it is shown in Table 6.5 to 6.8 done in order to helps the computer asset management staff easily define the allocation of technology for each employee and avoid technology gap. However, the usage of this framework needs to be done carefully as there are several formulas attached in the calculation. Therefore, to make the assessment becomes easier, an excel dashboard related to this calculation is made as it is shown in Figure 6.2 below.
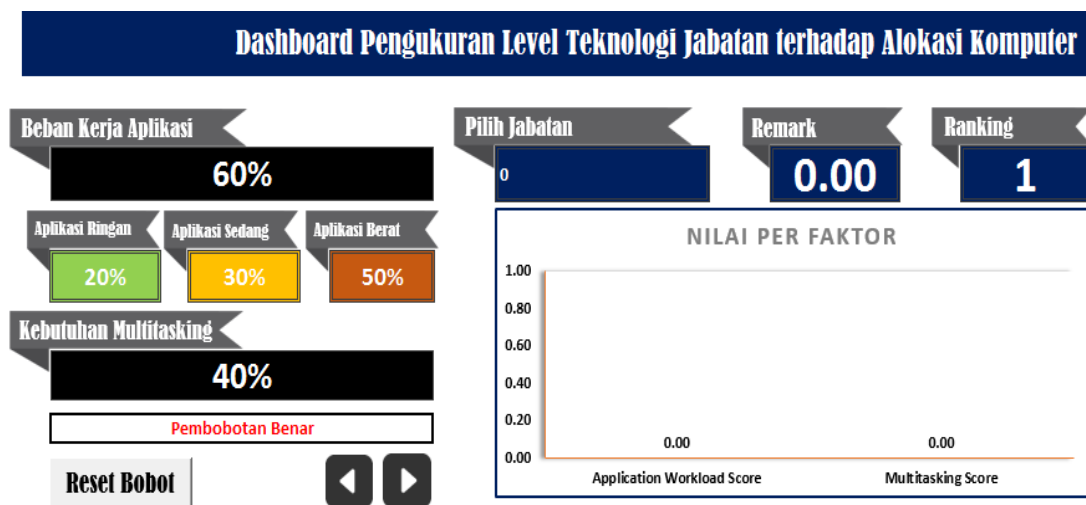
Figure 6.2 Dashboard Homepage

First the user need to input the weight allocation for each factors. There are 2 factor which are application workload (*beban kerja aplikasi)* and multitasking necessity (*kebutuhan* multitasking), and there are 3 sub-factors from the application workload which are light application (*aplikasi ringan),* medium application *(aplikasi sedang),* and heavy application *(aplikasi berat).* Then by following the next button as it is shown in the Figure 6.2 the user then will need to input several things such as functional job positions available in the organization, the application needed which already deployed from the competencies or subcompetencies, and the assessment score given to each functional position related to the factor and sub-factor.

After inputting all of the necessary information to the dashboard, the dashboard will automatically generate the score for each functional job position. As

it is shown in Figure 6.2 *Nilai Per Faktor* shows the score for each functional job position in regards to each factor (application workload and multitaskin needs). The dashboard will also generate the score and the rank of the functional job position. Besides, the dashboard will show the recapitulation of all functional job position in the form of chart to show the hisghest score. The example of the recapitulation can be seen in Figure 6.3 below.

Figure 6.3 Example of Remark Recapitulation for BAPPEKO

Figure 6.4 below shows the flow in assessing the level of the technology using the dashboard. There are 7 steps that needs to be done in order to do the evaluation of technology level using the dashboard. The first things to do is make sure that the weight for each factors is correctly allocated. The dashboard will show a notification if the weight is wrong. Then several data need to be inputted into the dashboard such as, all of the functional job position, list of all application used in the organization, then assessing each functional job position related to the application and the multitasking needs. Figure 6.4 is a flowchart that shows the plot as the guidance in doing the level of technology assessment using the dashboard.

Figure 6.4 Flowchart Plot to Fill the Dashboard

Next step is input all of the functional position that available in the organization as it shows in Figure 6.5 below. All of the functional position within the organization that aimed to be evaluate needs to be listed one by one in this table.

No	Jabatan
1	Kepala SKPD
2	Sekretaris
3	Kepala Bidang
4	Kepala Bagian
5	Staff Planner
6	Staff Pembantu Planner
7	Staff Mondalev
8	Staff Adminisrasi
9	Staff Keuangan
10	
11	
12	
13	
14	
15	

Figure 6.5 Coloumn Filling for Functional Job

After put all of the functional position in this table, the next step is input the whole application needed by the organization in the application table. The application that inputted in this step needs to be clustered into light application, medium application and heavy application first. Clustering done as some applications take more space in computer disk that make it heavier than other applications.

No	Jenis Aplikasi		
	Aplikasi Ringan	Aplikasi Sedang	Aplikasi Berat
1	Ms. Word	SPSS	AutoCAD
2	Ms. Excel	Minitab	3DsMax
3	Ms. PowerPoint	Paradox	After Effect
4	Ms. Visio		Fusion
5	Expert Choice		Arena
6			
7			
8			
9			
10			
11			

Figure 6.6 Coloumn Filling for Application

After inputing all of the functional positions and applications, the dashboard will automatically record it in assessment table. So, the next step is to give an

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assessment score to each functional position regarding each application for light, medium and heavy application. The example of the assessment shows in Figure 6.7 to 6.9 below.

Jabatan	Ms. Word	Ms. Excel	Ms. PowerPoint	Ms. Visio	Expert Choice
Kepala SKPD	4	4	4	2	2
Sekretaris	5	5	5	2	2
Kepala Bidang	5	3	5	2	3
Kepala Bagian	5	5	5	2	3
Staff Planner	5	5	5	5	5
Staff Pembantu Planner	4	4	4	1	1
Staff Mondalev	5	5	5	4	3
Staff Adminisrasi	5	5	3	2	1
Staff Keuangan	5	5	2	2	1

Figure 6.7 Coloumn Filling for Light Application

Jabatan	SPSS	Minitab	Paradox	0
Kepala SKPD	2	2	1	
Sekretaris	1	1	4	
Kepala Bidang	2	3	3	
Kepala Bagian	4	3	1	
Staff Planner	4	4	4	
Staff Pembantu Planner	3	2	2	
Staff Mondalev	4	3	3	
Staff Adminisrasi	1	1	5	
Staff Keuangan	1	1	1	
0				

Figure 6.8 Coloumn Filling for Medium Application

Jabatan	AutoCAD	3DsMax	After Effect	Fusion	Arena	
Kepala SKPD	1	1	1	1	1	
Sekretaris	1	1	1	1	1	
Kepala Bidang	1	1	1	1	1	
Kepala Bagian	3	3	2	2	1	
Staff Planner	4	4	3	3	1	
Staff Pembantu Planner	3	2	2	2	1	
Staff Mondalev	3	3	1	1	2	
Staff Adminisrasi	1	1	1	1	1	
Staff Keuangan	1	1	1	1	1	
0						

Figure 6.9 Coloumn Filling for Heavy Application

The last steps for the dashboard is assess the multitasking needs for each functional job position. The assessment done as it shows in Figure 6.10 below.

No	Jabatan	Multitasking
1	Kepala SKPD	2
2	Sekretaris	3
3	Kepala Bidang	4
4	Kepala Bagian	4
5	Staff Planner	5
6	Staff Pembantu Planner	3
7	Staff Mondalev	4
8	Staff Adminisrasi	3
9	Staff Keuangan	3
10	0	

Figure 6.10 Coloumn Filling for Multitasking

This dashboard will help to generate the calculation of the score without changing the formula one by one. Using this dashboard, the user can easily generate the score by inputing the functional position, the application used and the assessment score for each functional position to the application used in the organization.

6.1.2   Expert Judgement Regarding the Computer Mapping

As one of the IT based asset, computer is very closed related to the technology. According to The Emerging Future or TEF (2012), technology is something that will always growth in the future. TEF also stated that the human intuitive regarding the speed of technology is doubling for every 5 years. Therefore, based on Passmark.com (2016), which doing a benchmarking related to the several CPU performances based on the processor from the high end CPU such as core i5, core i7 to the low range CPU such as Pentium. Passmark do abenchmarking in term of performance of the processor. Passmark also shows the common price of each CPU in dollar (based on America market).

This recommendation stated by considering the current technology that available in the market. However, technology is running faster year by year. Therefore, this recommendation needs to be renew if there is a breakthrough related to the newest technology available in the market, or if the organization is capable to upgrade its technology.

PassMark - CPU Mark
Common CPUs - Updated 10th of July 2016

CPU	CPU Mark	Price (USD)
Intel Core i7-4930K @3.40GHz	13,067	$784.43
Intel Core i7-5820K @3.30GHz	12,974	$389.99
Intel Core i7-3930K @3.20GHz	12,045	$370.00
Intel Core i7-4790K @4.00GHz	11,196	$339.99
Intel Core i7-6700K @4.00GHz	10,997	$344.95
AMD FX-9590 Eight-Core	10,260	$189.00
Intel Core i7-4770K @3.50GHz	10,142	$411.96
Intel Core i7-4790 @3.60GHz	10,004	$304.99
Intel Core i7-6700 @3.40GHz	9,948	$314.99
Intel Core i7-4770 @3.40GHz	9,819	$306.99
Intel Core i7-3770K @3.50GHz	9,566	$543.49
Intel Core i7-3770 @3.40GHz	9,337	$351.03
Intel Core i7-3820 @3.60GHz	8,996	$479.99
AMD FX-8350 Eight-Core	8,945	$159.95
Intel Core i7-2600K @3.40GHz	8,512	$354.41
Intel Core i7-2600 @3.40GHz	8,258	$360.00
Intel Core i7-4720HQ @2.60GHz	8,072	NA
Intel Core i7-6700HQ @2.60GHz	8,040	$1,509.00*
AMD FX-8320 Eight-Core	8,016	$139.99
Intel Core i7-4710HQ @2.50GHz	7,848	NA
Intel Core i5-6600K @3.50GHz	7,797	$239.99
Intel Core i7-4700HQ @2.40GHz	7,765	$383.00*
Intel Core i7-4700MQ @2.40GHz	7,747	$188.95*
Intel Core i5-4690K @3.50GHz	7,697	$239.99
AMD FX-8150 Eight-Core	7,622	$165.99*
Intel Core i7-3630QM @2.40GHz	7,618	$304.49*
Intel Core i5-4690 @3.50GHz	7,615	$223.99
Intel Core i5-4670K @3.40GHz	7,611	$371.00
Intel Core i7-3610QM @2.30GHz	7,463	$399.99*
Intel Core i5-4670 @3.40GHz	7,354	$226.99
Intel Core i5-4590 @3.30GHz	7,200	$198.98
Intel Core i7-4702MQ @2.20GHz	7,148	NA
Intel Core i5-3570K @3.40GHz	7,137	$496.28
Intel Core i5-4570 @3.20GHz	7,013	$198.78
Intel Core i5-3570 @3.40GHz	6,980	$321.00
Intel Core i7-3632QM @2.20GHz	6,929	$389.95*

Figure 6.11 Processor Performance Chart

CPU	CPU Mark	Price (USD)
Intel Core i5-4460 @3.20GHz	6,612	$189.99
AMD FX-8120 Eight-Core	6,574	$173.18*
Intel Core i5-3470 @3.20GHz	6,567	$359.95
Intel Core i5-2500K @3.30GHz	6,449	$365.52
Intel Core i5-4440 @3.10GHz	6,407	$199.35
AMD FX-6300 Six-Core	6,340	$94.99
Intel Core i5-2500 @3.30GHz	6,238	$229.99
Intel Core i7-2670QM @2.20GHz	5,949	$378.00*
Intel Core i5-3330 @3.00GHz	5,861	$199.99
Intel Core i5-2400 @3.10GHz	5,839	$210.00
AMD Phenom II X6 1090T	5,678	$300.00*
Intel Core i7-950 @3.07GHz	5,636	$263.69
Intel Core i7-2630QM @2.00GHz	5,561	$184.95*
Intel Core i7-870 @2.93GHz	5,461	$294.69
AMD FX-6100 Six-Core	5,395	$89.99*
Intel Core i7-860 @2.80GHz	5,093	$354.99
AMD Phenom II X6 1055T	5,055	$185.00*
Intel Core i7-920 @2.67GHz	4,994	$329.95
Intel Core i3-4130 @3.40GHz	4,770	$152.22

Figure 6.11 Processor Performance Chart (Cont')

Figure 6.11 Processor Performance Chart (Cont')

Figure 6.11 Processor Performance Chart (Cont')

Then, simultaneously with this performance benchmarking, a depth interview with 6 technician and computer expert done in order to obtain the level of technology considering the job that become the responsibilities of the user.

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Through this discussion, level of technology based on the available technology in the market present in the Table 6.9 below. This level explains the typical job or duties that served by certain level of technology. The full text of the interview can be seen in Appendix 5.

Table 6.9 Level of Technology Mapping based on Expert Judgement

Job Description	Minimum Technology Requirement	Level of Technology
Administration job that only dealing with report (Ms. Word, Ms. Excel, Ms. PowerPoint), correspondence, and internet usage.	Core 2 Duo	Level 5
Job that dealing with report, light or medium software, internet usage but need a faster respond.	Core i3	Level 4
Job that dealing with report, light/medium software, internet usage, and necessity in doing simple design without a heavy duty.	Core i3 with VGA	Level 3
Job that dealing with report, light/medium software, internet usage, and necessity in doing heavy duty design.	Core i5	Level 2
Advanced job, with a lot of task and very heavy duty design or games.	Core i7	Level 1

6.1.3   Standard Operating Procedure for Proposing New Asset

Standard operating procedure needed in order to organize the flow of information and activities happen regarding a certain process. In the current condition, a standard operating procedure for proposing new asset is not explained

clearly yet and do not accommodate the technology evaluation and computer assessment. Therefore, the new standard operating procedure trying to accommodate these two factors in order to help the decision maker decided whether to replace the computer or to maintain the computer and allocate the computer to the right position.

Simultaneously with this research, a research relted to the asset management in the government office done by Anastasi Hutagalung, (2016). According to Hutagalung, (2016) a new standard operating procedure that already accommodate an evalution to the IT based assest needs to be done before send the proposal to the secretary. Therefore, before proposing a new asset replacement, an evaluation regarding the asset need to be analyzed in order to decide whether the asset is indeed need to be replaced. A sharp increment of the number of computer asset in SKPD happen based on the data obtain from SIMBADA as it is stated in Figure 1.2. However, the additional number of computer asset proposal keep increasing. According to the direct survey and a questionnaire survey, this condition happen as the allocation of the computer is not well organized. This condition lead to technology gap and technology waste. Therefore, an evaluation of the asset is one approach used to limit the proposal of new asset by giving a term and condition in which a computer can be categorized as obsolete. Several information inputted to the evaluation form such as the asset identification, asset description, job description that will be satisfied, and the remark of computer technology allocation.

The observation and review of the proposal need to be done not only by the procurement unit, but also the asset menagment staff from each SKPD. Using layering review, it is directed that the selection process will be tighter in order to limit the number of unnecessary replacement for the computer asset.
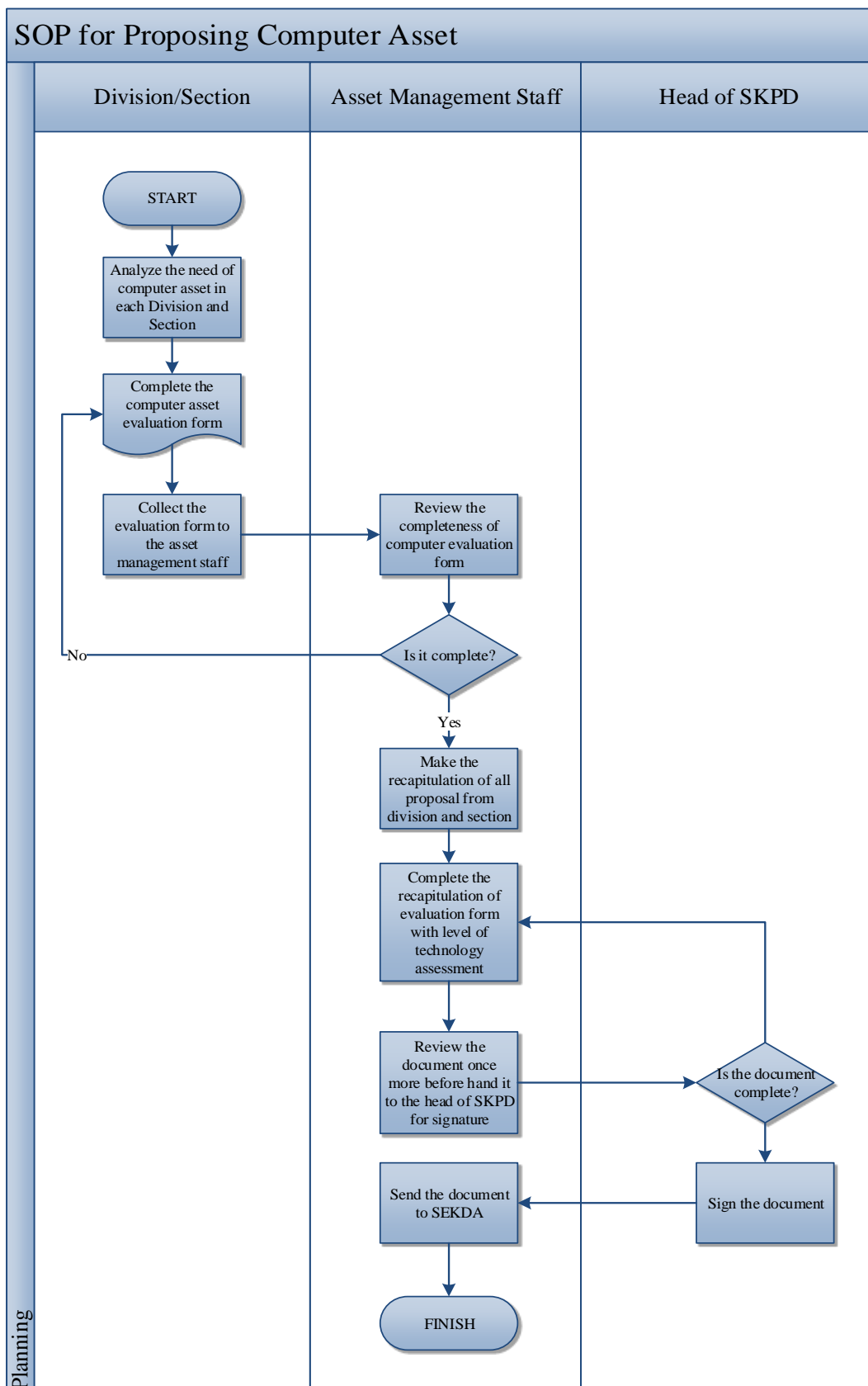
Figure 6.12 Swimlane Diagram for Proposing Computer Asset

6.2   Computer Allocation

Computer asset needed to be allocated properly based on the workload of each position. The allocation of the computer needed to followed the remark of the level of technology assessment in order to provide a certain position with suitable computer based on the job description and the workload of the job or position.

6.2.1   Standard Operating Procedure for Computer Allocation

The allocation of the computer here means that the proposal of new asset from SKPD is approved by the procurement unit. Therefore, there will be several new computers allocated to the SKPD. This standard operating procedure explain the flow of the computer from the allocation to the possibility of downgrade mechanism for the old computer. In the current condition, the allocation of the computer only considering the request. Those who already request will get the allocation without considering the condition of the computer and the other computer among the organization.

This generic recommendation regarding the allocation of the computer allowed the cross allocation of computer. For example, if there are several request from the division or sections regarding new computer, then the asset management staff will collect and send the request. If the computer allocated to the SKPD is higher than the request specification or maybe higher than the level of technology for the user in the division or section, then the asset management staff can allocate the computer for the suitable level of technology. Meanwhile, the user who requesting a new computer can get the old computer own by the user who get the new computer. Using this mechanism, then every computer allocated to the SKPD can be allocated to the suitable level of technology. This condition prevents the technology gap that may happen among the workload.
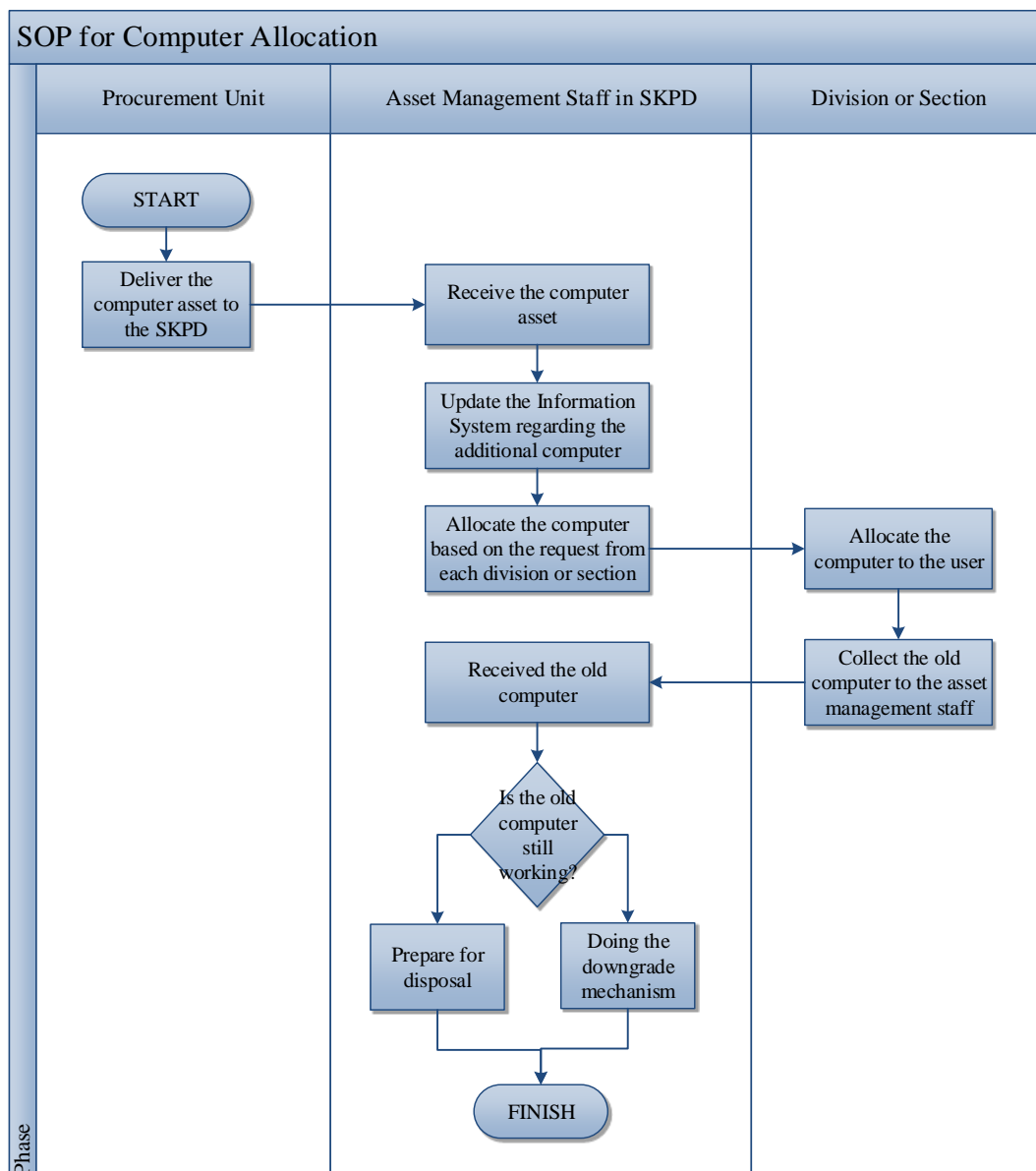
Figure 6.13 Swimlane Digram for Computer Allocation

6.2.2 Downgrade Mechanism

Downgrade mechanism is a procedure in which a user with high level of technology obtain the newest technology for upgrade. Therefore, the old computer can be allocated or downgraded for user who has a lower level of technology. The downgraded computer can be allocated for both in the same SKPD or to the different SKPD who needs the computer. Using this mechanism, it can help to reduce the number of computer requested to the procurement unit, and reduce the possibility of disposing a well-functioned computer (if not necessary). The mechanism of downgrade allocation can be seen in Figure 6.14 below.

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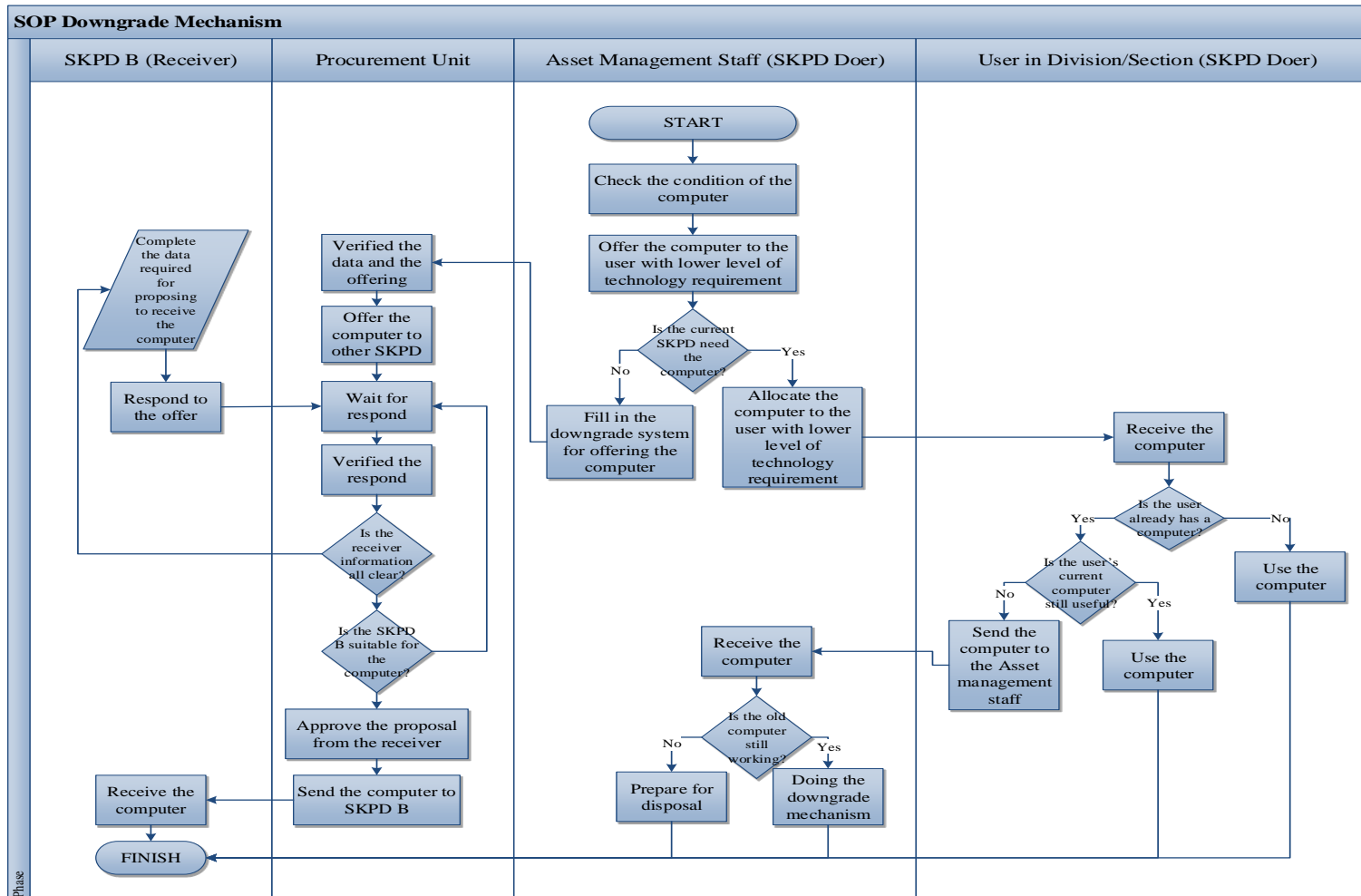
Figure 6.14 Swimlane Diagram for Downgrade Mechanism

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As it is shown in Figure 6.14 above, the downgrade mechanism can happen both in the same SKPD means that the downgrade mechanism done from one division to other division or section, or it can be the opposite. For downgrade mechanism in the same SKPD, the decision maker and the reviewer is the asset management staff. However, for downgrade mechanism that done from one SKPD to the other SKPD the procurement unit act as the reviewer and decision maker for the allocation as the procurement unit knows the necessity and capability of each SKPD regarding the asset management and asset necessity. With procurement unit as the reviewer, it can be used to avoid any wrong allocation in considering the real condition of asset ownership of the SKPD receiver.

6.3   Hardware and Software Maintenance

Basically computer is divided into two important part which are hardware and software (Barata, 1999). Computer as one of the critical tools in supporting office duties, need to be maintain on its good performance. The maintenance of both hardware and software needed to be done in order to support the best performance of the computer itself. The performance of the computer, basically will decreasing along with the time goes. However, during its service life, it is indeed necessary to maintain the computer in good performance so that it can support the job effectively. In current condition, BAPPEKO does not have a guidance or any regulations related to the both hardware and software maintenance.

6.3.1   Hardware Maintenance

Hardware maintenance mostly done by the technician as it is necessary to open up and break down several part of the computer to clean them up. A regular clean-up for the hardware component in computer is necessary. However, according to the interview done with the asset management staff in BAPPEKO, a regular maintenance for the hardware such as cleaning up for every 6 months will a little bit disturbing for the job. The office is running every day from 8 AM to 16 PM. Therefore, a regular maintenance will be disturbing and burden referring to the number of computer which is 107 units.

Relevant to this case, a regular maintenance does not always need to be done by the technician. Several simple hardware maintenances can be done by the user of the computer even if the user is not someone expert in computer. Related to the cleaning up the computer by break down several part such as the Central Processing Unit (CPU) of the computer does not always need to be exactly 6 months once a year is also an acceptable number. Table 6.10 below shown several maintenances that can be done by a user in general.

Table 6.10 General Hardware Maintenance

Hardware Maintenance	
1	Keep the stability of the electricity source
2	Turn on and/or turn off the computer properly
3	Use the computer properly
4	Keeping a distance from water
5	Clean up the CPU

6.3.2   Software Maintenance

Software maintenance is a sensitive part of the computer. As it is very fragile to any sickness such as virus, software crash, malware, disk bad sector, etc. Opposite from the hardware maintenance, a lot of simple software maintenance can be done by general user. Even though the user is not an expert on computer a simple maintenance can be chosen in order to keep the health of the computer so that it can served on its good performance during its service life.

Software is more fragile than hardware in term of healthy condition (Barata, 1999). This is because software is directly in touch with any activities that done by the user that very easy to get broken. Therefore, it is a must to maintain the software in order for the computer to work well. As software is more fragile than the hardware, the maintenance of software also more regular compared to hardware. If hardware maintenance can be done up to once a year only, some software maintenance needed to be done every day. According to the interview to the technician and literature review in some computer magazine there are several maintenances that can be done by general user even without any supervision from

a computer expert. The software maintenance along with the schedule can be seen in Table 6.11 below.

Table 6.11 General Software Maintenance

Software Maintenance			
No	Activity	Frequency	Step by Step
1	Disk Defrag	Every 6 months	- Go to Control Panel
			- Choose System and security
			- Choose Defragment and optimize your drives
			- Choose certain drive
			- Click optimize
			- Click close if the process already done
2	Cleaning up unnecessary software	Every 4 months	- Go to Control Panel
			- Choose Software and Programs
			- You will see all of the application and software installed on your computer
			- Choose application or software that do not used anymore
			- Choose Uninstall
			- Wait until the process is done
			- Click close if the process already done
3	Deleting unnecessary files	Every month	- Sort your necessary files into one folder
			- Delete every junk file (useless files)

Table 6.11 General Software Maintenance (Cont')

Software Maintenance			
No	**Activity**	**Frequency**	**Step by Step**
4	Cleaning up internet history and cache	Every week	- Go to Internet setting
			- Choose history
			- On the history page, choose "Clear all browsing data"
			- Change the top down menu to the necessity (better from the beginning of time)
			- Check several item that want to be erased in the checkbox
			- Click clear browsing data
			- Wait for the process to be done
			- Close the setting
5	Full scanning antivirus	Every week	- Go to the antivirus homepage
			- Choose full scanning
			- Check the disk that need to be scanned
			- Wait for the process to be done
			- Close the antivirus
6	USB scanning	Every time use USB	- Right click on the disk attach to the computer
			- Choose scan with antivirus

Another software maintenance that can be done to keep the performance of the computer is limit the usage of the computer only for office use. Several problems that happen in computer can be caused by another use of computer such as using the computer intensively for high internet usage such as gaming, streaming, etc. Another problem that needs to be avoid in computer usage is saving many personal files into the office computer. The office computer should be limited only

for office use, because the intensive usage of computer for personal purpose trigger several problems that decrease the performance of the computer. Therefore, an office computer should be limited only for office use.

6.4 Computer Literacy

Computer literacy is a standard of computer skills that categorized from basic skill until the proficient one. This stsandard provide a guidance so that an individual computer capability can be adjusted with the computer allocation. By doing so, it will also help to minimize the possibility of under utilize technology caused by incompatible computer with the individual's capability.

Table 6.12 Computer Literacy: Computer Use

Basic	Intermediate	Proficient

• Power on and off the computer
• Open and close applications
• Open, save and close files
• Print documents
• Identify parts of a computer (CPU, monitor, mouse, keyboard, trackpad, speakers)
• Use input device (e.g., mouse)
   o Click/select and hold
   o Drag and drop
• Move cursor
• Type/enter letters and numbers
• Recognize and use icons to perform
• computer and software functions
• Use special function keys (shift, return/enter, escape, backspace, multi-key functions, capslock)
	• Locate and retrieve files in various
	• directories
	• Save the same file in multiple locations
	• (flash drive, My Documents, network
	• folders)
	• Recognize and save files in various
	• formats (.bmp, .jpg, .pdf, .html, etc.)
	• Create folders to organize files
	• Rename files
	• Delete files
	• Select appropriate printer and print
	• Choose appropriate page setup features
	• Use multiple ways to accomplish the
	• same task including keyboard shortcuts,
	• icons and menus
	• Use input device (e.g., mouse)
	• Use peripheral devices such as
		• Attach and use peripheral devices such
		• as scanners, digital cameras, media storage (e.g., flash drive), and
		• projection devices
		• View file properties to determine
		• memory size
		• Locate and use accessibility features, as
		• needed
		• Magnifier
		• Sticky keys
		• Multitask in a variety of ways
		• Save a compressed file (.zip)

Basic	Intermediate	Proficient

• Use/adjust volume controls
• Insert and eject media input devices (CD/DVD)
• Troubleshoot common technology problems
  o Printer (out of tone or out of paper)
  o Computer (power cords, network connections, peripheral connections)
	• scanners, digital cameras, and
	• projection devices
	• Multitask by using Task Bar and or
	• minimize/maximize command or icon
	• Use special function keys
	• Troubleshoot common technology problems
	• Printer queue
	• Not connected to the network	

Table 6.13 Computer Literacy: Using and Creating a Databases

Basic	Intermediate	Proficient
• Open an existing database file Enter data in a content related database using a database template or form • Search for specific data/information by field • Preview and print a datasheet	• Edit data in existing database records • Modify database fields • Add and delete records • Create a new database from design view, data view, or using a wizard • Define database fields in a record • Set field attributes • Manage headers and footers • Use the find and sort functions	• Insert graphics/digital files, etc. into field type • Use the show and hide functions • Create a query • Filter data • Generate a report of data gathered from database sources

Table 6.14 Computer Literacy: Using Digital Imaging Tools

Basic	Intermediate	Proficient
• Use tools to create original images • Change image colors and patterns • Add text to describe an image • Save or download digital images to a computer • Change the size or shape of an object Change the pattern or color of an object • Rotate and flip objects	• Create original or edit existing images Use the crop tool to cut or trim an image • Use the attributes/properties options to modify an image • Import a digital image into a document or presentation • Insert, move, and resize an image in a document or presentation • Use a scanner or digital camera to generate an image • Recognize and save image files in various formats (.bmp, .gif, .tif, .jpg, .pdf, .html, etc.)	• Adjust pixels and resolution of an image to adjust quality and file size • Edit photos and images • Create and edit movies and animations

Table 6.15 Computer Literacy: Using Email

Basic	Intermediate	Proficient
• Apply communication skills and netiquette • Read an email • Compose and send an email • Reply to a message • Delete an email	• Apply communication skills and • netiquette • Use "reply all" • Add an attachment • Save an attachment • Use carbon copy	• Apply communication skills and netiquette • Create an address/distribution list • Use blind carbon copy • Organize emails into folders

Table 6.16 Computer Literacy: Using Multimedia Presentation

Basic	Intermediate	Proficient
• Apply pre-production organizational concepts (such as storyboarding and visual organizers) • Save a presentation file • Create an original presentation or use a template • Rearrange slides using slide sorter or a storyboard feature to organize a presentation • Choose a slide format • Use icons and menus • Type/enter text or create a text box • Change (Font size, Font Type, Style, Effect, color) • Cut, copy, and paste text • Use undo and redo icons • Select and resize graphics, pictures, clip art • Create a new file using Save As • Use page setup Print • Use slide show tool	• Select slide transitions and animations Insert graphics, clip art, sounds, and multimedia files (including narration) • Format text (bullet, numbers, alignment, indention, outlining, coloumns) • Modify the background and layout of presentation slides • Use find, change, and replace tools Apply principles and elements of graphic design • Use tools to rotate, edit, or highlight text • Insert objects such as graphs, charts, and spreadsheets • Insert hyperlinks • Print audience handouts to support a multimedia presentation Insert page/slide numbers • Manage headers and footers	• Edit master slide(s) • Adjust presentation timing, action buttons, and looping • Import animations, sounds, and multimedia from other files/applications (such as background music and visual organizers • Create presentations using navigation buttons and non-linear design • Work in various modes/views (such as outline, notes, and presentation) • Save presentations in other formats (such as HTML) • Adjust page/slide view • Troubleshoot formatting problems using Help feature • Modify tool bars to reflect current use for tool(s)

Table 6.17 Computer Literacy: Using and Creating Spreadsheets

Basic	Intermediate	Proficient

• Select a cell
• Enter data into cell
• Format cells and data
   ○ Font size
   ○ Style
   ○ Color
   ○ Alignment
   ○ Decimal places
   ○ Currency
   ○ Date/time
   ○ Percent
• Create a basic chart or graph
	• Select multiple cells
	• Insert, delete, and format cells, rows, or column
	• Format move, and copy cells, rows, or column
	   ○ Widths
	   ○ Height
	   ○ Color
	• Manage header and footer
	• Select appropriate graph and elements to display data
	• Use sort option
	• Use simple formulas such as sum and average/mean
	• Use editing tools such as fill down and sill across
	• Set print area and print spreadsheets and graphs
	• Insert chart and graphs into other documents
	• Apply principles and elements of data analysis
		• Create and use spreadsheets assessment, productivity, and problem solving
		• Create complex formulas such as median, mode, and percentage
		• Use advanced graph features and elements to display data
		• Import or insert other digital elements to the spreadsheet
		• Use filter option
		• Use hide and show options
		• Save in other formats such as .html, .pdf., etc.

Table 6.18 Computer Literacy: Using Word Processing

Basic	Intermediate	Proficient

• Start a new document
• Save a document
• Use icons and menus
• Type or enter text
• Complete a template or fill in a table
• Select text and change
• Style or effects (bold, underline, etc.)
	• Format text, lists, or paragraphs for
	   ○ Double spacing
	   ○ Bullets
	   ○ Numbered lists
	   ○ Alignment
	   ○ Indention
	   ○ Poetic forms
	   ○ Outlining
		• Insert and edit tables and table layout (borders, shading, column width, etc.)
		• Insert animation
		• Insert sound
		• Insert spreadsheets, graphs, and charts
		• Insert formulas

Table 6.18 Computer Literacy: Using Word Processing (Cont')

Basic	Intermediate	Proficient
- Cut, copy, and paste text - Use undo and redo icons - Select and resize graphics, pictures, clip art - Select multimedia clips - Create a new file using Save As - Use page setup and print preview Print - Use print preview - Use word count tool - Insert page numbers - Manage headers and footers - Use specific program templates and stationery	- Columns - Text direction - Text art - Word wrap - Use the spell check, grammar check, and thesaurus - Apply principles and elements of graphic design - Use find, change, and replace tools Use tools to rotate, edit, or highlight text - Insert graphics and clip art - Insert text boxes - Create page borders - Insert hyperlinks to Web sites or other files - Create columns and tables Use sort tool (ascending and descending) - Use number keys or number pad for mathematical functions	- Save as another format such as RTF, PDF, or HTML - Use function keys and keyboard shortcuts - Adjust page views - Troubleshoot formatting problems -- use Help feature - Modify toolbars to reflect current use or purpose for tool(s) - Use track changes and comments tools Customize options and preferences in specific software - Format text using - Spacing - Line spacing Justification - Margins - Tabs

Table 6.12 to 6.18 above shown several computers literacy taken from Maryland Technology Literacy Standard for Students (2012). This literacy act as the guidance in allocating the computer as well. A computer user with the whole basic computer literacy is limited to only several capabilities in operating computer and its software. This can lead to under utilize computer or waste of technology. Therefore, this guidance from computer use, using email, using word processing, using spreadsheet literacy helps to define the most suitable allocation for each computer user.

Computer lieracy itself needs to be connected to each functional position in order to assess the capabilities of the user. This assessment then can be used to help the allocation plan for the computer asset. The framework of the computer literacy assessment can be seen in Table below.

Table 6.19 Computer Literacy Assessment for Functional Position

Functional Position	Computer Literacy						
	Computer Use	Data-base	Digital Tools	Using Email	Presen-tation	Spread-sheet	Word Processing
Functional Position 1							
Functional Position 2							
Assessment Score							
B	Basic						
I	Intermediate						
P	Proficient						

Besides cross bredding between literacy and functional position the cross bred between computer literacy and the current technology need to be made as well. For example, several computer specifications represent by its processor such as core i7, core i5, and core i3 used to contrusct the second matrix as it is shown in Table 6.20 below.

Table 6.20 Computer Literacy Assessment for Current Technology

Processor	Computer Literacy						
	Computer Use	Data-base	Digital Tools	Using Email	Presen-tation	Spread-sheet	Word Processing
Core i7							
Core i5							
Core i3							
Assessment Score							
B	Basic						
I	Intermediate						
P	Proficient						

Table 6. 19 shown the requirement of computer literacy for each functional position. While, Table 6.20 shows the requirement of computer literacy for each computer technology represent by the processor. Using both of this tables then a comparison between the requirement of computer literacy based on the functional position and also based on the technology construct using Table 6.21 below.

Table 6.21 Comparison of Computer Literacy

Functional Position	Computer Literacy													
	Computer Use		Data-base		Digital Tools		Using Email		Presen-tation		Spread-sheet		Word Proces sing	
	C	R	C	R	C	R	C	R	C	R	C	R	C	R
Position 1														
Position 2														
Position 3														
Assessment Score														
B	Basic													
I	Intermediate													
P	Proficient													

Table 6.21 shows the comparison for computer literacy required by the functional position and also the technology. Colomn C (Current) used to write the assessment score for the functional position related to the computer literacy. While, colomn R (Recommendation) used to write the assessment score for the required computer literacy for technology. So, for example, a computer with processor core i5 has a computer literacy for each literacy category, then if a certain position allocated to have this computer, then the computer literacy score for the technology is the minimum requirement of the computer literacy needs to be satisfied by the user. Threfore using this comparison table, the gap between the literacy can be found an then a decision related to the improvement can be made.

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Appendix 1

Kuisioner Penggunaan Aset Komputer dan Printer
Badan Perencanaan dan Pembangunan Kota Surabaya

Perkenalkan kami mahasiswa dari Teknik Industri ITS. Saat ini sedang melaksanakan sebuah penelitian bersama dengan Bagian Perlengkapan Pemerintah Kota Surabaya.

Kuisioner ini terdiri dari 4 bagian. Bagian pertama merupakan data diri responden yang bersangkutan. Bagian kedua merupakan data pekerjaan yang dilakukan oleh responden yang bersangkutan. Bagian ketiga merupakan data aset komputer yang dialokasikan untuk responden, dan bagian terakhir merupakan evaluasi performansi komputer yang dialokasikan untuk responden.

1. Data Diri Responden

Hari/Tanggal   :

Nama   :

Jenis Kelamin   : L/P

Bagian/Bidang   :

Usia   :

Pendidikan terakhir :

ASET KOMPUTER

2. Data Pekerjaan

Apakah pekerjaan Anda memerlukan penggunaan komputer yang sangat intensif?	
Aplikasi apa sajakah yang sering Anda gunakan untuk mendukung pekerjaan Anda? (Word, Excel, E-gov, Internet, Email dll)	

Selain aplikasi yang telah disebutkan di atas, aplikasi apa sajakah yang sering Anda gunakan diluar pekerjaan? (contoh : Games, facebook, musik, film, dll)	

3. Data Aset komputer

Merk komputer   :

Nomor komputer   :

Processor   :

RAM   :

*untuk processor dan RAM bisa dilihat dengan klik kanan pada my computer (untuk windows 7) atau this PC (untuk windows 8) kemudian pilih properties.

131
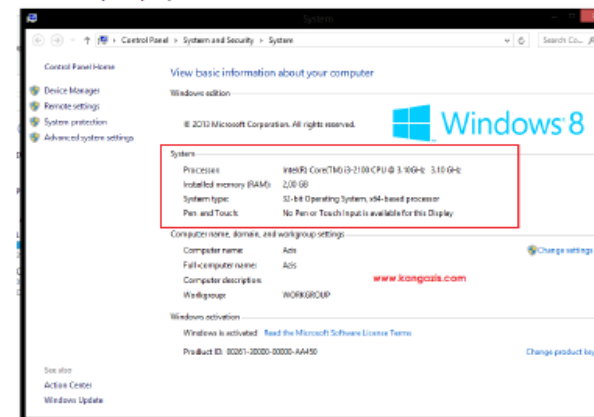
3.1 Apakah Anda mengetahui sepsifikasi dari komputer Anda (Processor, RAM, VGA, Jenis Hardisk, Memory Hardisk dll) ?
   a. Ya
   b. Tidak

3.2 Apakah Anda mengetahui stAndar penggunaan komputer yang baik seperti cara mematikan komputer yang benar, cara mengoperasikan komputer dan peralatannya dengan benar?
   a. Ya
   b. Tidak
   c. Sedikit tahu

3.3 Menurut Anda, bagaimanakah pengetahuan Anda mengenai teknologi?
   a. Sangat melek teknologi
   b. Melek teknologi
   c. Kurang paham terhadap teknologi
   d. Gagap teknologi
   e. Sangat gagap teknologi

3.4 Berapa lama komputer Anda menyala dalam satu hari?
   a. < 9 Jam
   b. 9 – 11 Jam
   c. 11 – 13 Jam
   d. > 13 Jam

3.5 Apakah Anda selalu mematikan komputer saat pulang kantor?
   a. Ya
   b. Tidak
   c. Sering terlupa

3.6 Bagaimanakah Anda mematikan komputer?
   a. Dengan fungsi shut down/ turn off pada komputer
   b. Menekan tombol power
   c. Menekan tombol CPU

3.7 Seberapa sering Anda menyimpan data dalam komputer Anda dalam satu hari?
   a. < 5 kali
   b. 5 – 10 kali
   c. 10 – 15 kali
   d. > 15 kali

3.8 Seberapa besar ukuran dokumen rata – rata data yang Anda simpan pada komputer Anda?
   a. < 1 MB
   b. 1 MB – 5 MB
   c. 5 MB – 10 MB
   d. > 10 MB

3.9 Apakah ada data lain seperti video, film, games, lagu yang Anda simpan dalam komputer Anda?
   a. Ya, banyak
   b. Ya, tidak banyak
   c. Ya, sedikit
   d. Tidak ada

3.10 Apakah Anda sering membersihkan file – file yang tidak penting dalam komputer Anda?
   a. Ya (lanjut ke pertanyaan 3.11)
   b. Tidak (lanjut ke pertanyaan 3.12)

3.11   Seberapa sering Anda membersihkan file – file tersebut?
a. 1 hari sekali
b. 1 minggu sekali
c. 1 bulan sekali
d. Lainya………………

3.12 Berikut merupakan beberapa perawatan sederhana yang dapat Anda lakukan sendiri pada komputer Anda. Manakah yang biasanya Anda lakukan? (Boleh memilih lebih dari satu)
a. Scan antivirus dan spyware
b. Disk defrag
c. Menghapus software yang tidak terpakai
d. Menghapus cache dan history internet
e. Lainnya, sebutkan………

3.13 Jika komputer yang Anda gunakan mengalami masalah kecil seperti software crash, virus, perlu install ataupun uninstall (diluar masalah hardware) semampu apa Anda memperbaiki komputer Anda sediri?
a. Sangat mampu
b. Mampu
c. Coba – coba
d. Tidak mampu
e. Sama sekali tidak mampu

4. Evaluasi Aset Komputer dan Penggunaan Komputer
Pada bagian ini, Anda diminta untuk mengevaluasi performansi dari komputer yang telah dialokasikan untuk Anda. Anda diminta untuk memberikan rating pada beberapa pernyataan terkait performansi komputer Anda.

1 : Sangat tidak setuju
2 : Tidak setuju
3 : Kurang setuju
4 : Setuju
5 : Sangat setuju

Pernyataan	1	2	3	4	5
Mudah digunakan					
Sering lemot					
Sering not responding					
Sering mati mendadak					
Sering panas					
Sesuai dengan kebutuhan (spesifikasi)					
Memory penuh					
Layar sering Blank					

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Appendix 2

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
1	Ardianti Oktora	F	Secretariat	Administration Staff	29	Lenovo	Thinkvision	Core 2 Duo	2.67	2GB
2	Amirudin	M	Secretariat	Planner Staff	7	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
3	Ismawati	F	Secretariat	Administration Staff	19	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
4	Muhammad Irfan	M	Secretariat	Administration Staff	21	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
5	Kustiningsih	F	Secretariat	Administration Staff	6	Acer	X173W	Core 2 Duo	2.6	1 GB
6	Esty	F	Physics and Infrastructure	Mondalev Staff	66	Acer	Aspire	Core i3	2.9	2 GB
7	M. Ali Rakhmadi	M	Physics and Infrastructure	Mondalev Staff	54	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
8	Mochamad Syaiful Arif	M	Physics and Infrastructure	Mondalev Staff	64	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
9	Andi A	M	Physics and Infrastructure	Mondalev Staff	67	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
10	Titis Ratih	F	Physics and Infrastructure	Administration Staff	65	Lenovo	Thinkvision	Core 2 Duo	2.67	

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
11	Syamsul Arifin	M	Physics and Infrastructure	Administration Staff	44	Lenovo	Thinkvision	Core 2 Duo	2.67	
12	Harfandi	M	Physics and Infrastructure	Mondalev Staff	60	Lenovo	Think Centre	Core i3	2.92	2 GB
13	Ika Marillu S	F	Physics and Infrastructure	Administration Staff	68	Lenovo	Thinkvision	Core 2 Duo	2.67	
14	Kartika Dwi Paramitha	F	Physics and Infrastructure	Mondalev Staff	-	Lenovo	Thinkvision	Core 2 Duo	2.86	4 GB
15	Rio	M	Physics and Infrastructure	Mondalev Staff	61	Lenovo	Think Vision	Core 2 Duo	2.66	1.5
16	Chairina Okta	F	Physics and Infrastructure	Administration Staff	55	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
17	Pramuda Alif Firdausy	M	Physics and Infrastructure	Mondalev Staff	64	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
18	Hana Sagiastu Firdaus	F	Secretariat	Planner Staff	108	Lenovo	Thinkcentre	Core i5	3.2	2GB
19	Ulfatul Bidayah	F	Secretariat		102	Lenovo	Thinkcentre	Core i3	2.92	2 GB
20	Vera Maya Andini	F	Secretariat		-	HP	ProOne 400	Core i7	3.6	8 GB

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
21	Bima Bella Permana	M	Secretariat	Planner Staff	110	Lenovo	C 360	Core i3	2.9	2 GB
22	I Made Putra Darma Wijaya	M	Secretariat		109	Lenovo	C 360	Core i5	3.2	2 GB
23	Leryan Dona Dony	M	Secretariat		104	Lenovo	HS30S	Core i7	3.6	4 GB
24	Qurrata A'yun	F	Secretariat		106	Lenovo	Thinkcentre	Core i5	3.27	2 GB
25	Madin Putra	M	Secretariat	Planner Staff	-	Lenovo	AIO	Core i3	2.97	2 GB
26	Astri Paratina Dewi	F	Secreatriat	Administration Staff	22	Lenovo	Thinkcentre	Core i3	2.97	2 GB
27	Alvian Chanasal Mubbaroq	M	Secretariat	Planner Staff	4	Lenovo	Thinkcentre	Core i5	3.2	2 GB
28	Eka Soelastri	F	Public Welfare	Mondalev Staff	86	AOC	716Vwy	Dual Core		2 GB
29	Anis Nur Samsiati	F	Public Welfare	Mondalev Staff	87	Lenovo	Thinkvision	Core 2 Duo	2.67	
30	Karlina Winaryanti	F	Public Welfare and Governance Apparatus	Mondalev Staff	88	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
31	Atika Hanum Sari	F	Public Welfare and Governance Apparatus	Planner Staff	89	Lenovo	Thinkvision	Intel Core Duo	2.66	2 GB
32	Reza Santa Pratiwi		Public Welfare and Governance Apparatus	Mondalev Staff	85	AOC	&16Vwy	Intel Pentium Dual	2.1	1 GB
33	Eny Hartati Endrasari	F	Public Welfare and Governance Apparatus	Mondalev Staff	84	LG	L177WSB	Core 2 Duo	2.6	
34	Luciana Utami Dewi	F	Public Welfare	Mondalev Staff	78	Lenovo	Thinkvision	Core 2 Duo	2.67	
35	Iin Widiastutik	F	Public Welfare	Mondalev Staff	79	Lenovo	Thinkvision	Core 2 Duo	2.67	1 GB
36	Mochammad Lutfi Yusuf	M	Public Welfare and Governance Apparatus	Mondalev Staff	76	IBM		Intel Core 2 Duo	2.66	2 GB
37	Ervy Puspitaningrum	F	Public Welfare and Governance Apparatus	Mondalev Staff	75	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
38	Bagus Wahyu Purnomo	M	Public Welfare and Governance Apparatus		83	LG	L177WSB	Intel Pentium Dual	2.4	1 GB
39	Catur Budi Utami	F	Public Welfare and Governance Apparatus	Administration Staff	83	BENQ	152WA	Pentium 4	2.2	512 MB
40	Ony Tri Prasetyo	M	Public Welfare	Mondalev Staff	72	Lenovo	Thinkcentre	Core i3	2.9	2 GB

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
41	Achmad Syarifudin	M	Public Welfare	Mondalev Staff	69	Lenovo	Thinkvision	Dual Core	2.4	1 GB
42	Desy F	F	Public Welfare		-	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
43	Nina Anggreni	F	Public Welfare and Governance Apparatus	Planner Staff	74	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
44	Putri Perwira	F	Public Welfare	Planner Staff	77	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
45	Sumarno Hendrawan	M	Public Welfare and Governance Apparatus	Administration Staff	-	Lenovo	Thinkvision	Core 2 Duo	2.67	
46	Nani Pertiwi	F	Public Welfare	Head of Governance Apparatus and Citizenship Sub-section	96	Lenovo	Thinkcentre	Core i5	3.2	2 GB
47	Ivan Wijaya	M	Economic	Head of Business Development Sub-section	92	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
48	Retno	F	Economic	Mondalev Staff	32	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
49	Siti Nurhasanah	F	Economic	Mondalev Staff	27	View Sonic	VA1716w	Pentium 4	2.2	512 MB
50	Ditha	F	Economic	Mondalev Staff	31	Lenovo	Thinkvision	Core 2 Duo	2.67	

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
51	Nuralaili Mauliddah	F	Economic	Mondalev Staff	39	View Sonic	VA1716w	Pentium 4	2.2	1.5 GB
52	Antono	M	Economic	Mondalev Staff	34	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB
53	Naratama Haryo Pamungkas	M	Economic	Mondalev Staff	26	Lenovo	Thinkcentre	Core i5	3.2	2 GB
54	Artininingsih	F	Economic	Mondalev Staff	23	Lenovo	Thinkcentre	Core i5	3.2	2 GB
55	Trivianty Sulistyarini	F	Economic	Mondalev Staff	28	Lenovo	Thinkcentre	Core i3	2.9	2 GB
56	Andi Fiksi	M	Economic	Mondalev Staff	37	Lenovo	Thinkcentre	Core i5	3.2	2 Gb
57	Kuat Djoko Sambodo S.Sos	M	Economic	Planner Supporting Staff	98	Lenovo	Thinkvision	Core 2 Duo	2.67	
58	Christian N A	M	Economic	Planner Staff	36	Lenovo	Thinkvision	Core 2 Duo	2.66	2 GB
59	Myrna A Aditya	M	Physics and Infrastructure	Planner Staff	50	Lenovo	Thinkvision	Core 2 Duo	2.8	2 GB
60	Arum Safitri Rahayu	F	Physics and Infrastructure	Mondalev Staff	48	Lenovo	Thinkcentre	Core i3	2.9	2 GB

No	Name	Gender	Division/Section	Function	Computer number	Brand	Type	Processor	Speed (GHz)	RAM
61	Putut D Widanto	M	Secretariat	Planner Staff	9	Lenovo	Thinkvision	Core 2 Duo	2.67	
62	Dian Anggraini	F	Sub-division of Preparation and Work Plans	Planner Staff	99	Lenovo	Thinkcentre	Core i5	3.2	2 GB
63	Tiara Elfita	F	Sub-division of Preparation and Work Plans	Planner Staff	10	HP	Pavillion	Core i5	3.2	4 GB
64	Ifrohah	F	Sub-division of Preparation and Work Plans	Mondalev Staff	103	HP	Pavillion	Core i5	3.2	4 GB
65	Hadi Ismanto	M	Physics and Infrastructure		42	Lenovo	Thinkvision	Core 2 Duo	2.66	1 GB
66	Beta	M	Physics and Infrastructure	Planner Staff	125	Acer	Aspire	Core i3	2.97	2 GB
67	Dhoni	M	Public Welfare	Mondalev Staff	70	LG	Flatron L177WSB	Core 2 Duo	2.6	1 GB
68	Benny Iriawan	M	Economic	Mondalev Staff	24	Acer	X213H	Core 2 Duo	2.6	4 GB
69	Akhmad Yusuf	M	Secretariat	Head of Finance Sub-division	53	Lenovo	Think Centre	Core i3	2.9	2 GB
70	Cicik Herawati	F	Financial Staff	Financial Staff	12	Acer	X213H	Core 2 Duo	2.67	2 GB

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Appendix 3

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
1	Ardianti Oktora	Yes	Ms.office, internet, email, e-gov,	Music	No	Yes	Not really	> 13	Yes	Shutdown	< 5	> 10	Yes, little	Never	Antivirus, deleted unnecessary software	No
2	Amirudin	Yes	Ms.Office, E-gov, Internet, email,	Youtube, PostGre, Php	Yes	Yes	Average	9 - 11	Yes	Shutdown	> 15	1 - 5	Yes, little	Never	Antivirus, deleted unnecessary software	Trial and Error
3	Ismawati	Yes	Ms.Office, E-gov, Internet, email,	Browsing	No	Little	Not really	< 9	Yes	Shutdown	5 - 10	1 - 5	No	If remember	Antivirus	Trial and Error
4	Muhammad Irfan	Yes	Ms.Office, E-gov, Internet, SIMBADA, email	No	No	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	1 - 5	Yes, little	If remember	Deleted unnecessary software	No
5	Kustiningsih	Yes	Ms.Office, email, internet	No	Yes	Yes	Not really	9 - 11	Yes	Shutdown	10 - 15	1 - 5	Yes, little	Never	Scan virus	No
6	Esty	Yes	Ms.Office, e-gov, email	Facebook, games	No	Little	Average	9 - 11	Yes	Shutdown	10 - 15	1 - 5	Yes, little	Once a month	Scan virus	No
7	M. Ali Rakhmadi	Yes	Ms.Office, E-gov,	Facebook, Line, Web WhatsApp	Yes	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	1 - 5	Yes, Not Much	Never	Scan virus, Defrag,	Very capable

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
			Internet, email,												deleted unecessary software, deleted cache	
8	Mochamad Syaiful Arif	Yes	Ms.Office, E-gov, Internet, AutoCAD, Emcil	Games, Music, Film	Tidak	Yes	Advanced	> 13	Yes	Shutdown	10 - 15	1 - 5	Yes, a lot	Once in 3 months	Scan Virus, Deleted unecessary software	Trial and Error
9	Andi A	Yes	Ms.Office, E-gov, Internet, Email, AutoCAD, Adobe	No	Yes	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	> 10	Yes, Not Much	Once in a month	Scan virus	Trial and Error
10	Titis Ratih	Yes	Ms.Office, Internet, E-gov	Browsing	No	Little	Not Really	9 - 11	Yes		5 - 10	< 1 MB	Yes, not much	Once in a month	Never	Srongly No
11	Syamsul Arifin	Yes	Ms.Office, E-gov, Internet, Email	Games, Facebook, Music, film	Yes	Yes	Average	< 9	Yes	Shutdown	5 - 10	1 - 5	Yes, little	Once in a month	Scan virus	Trial and Error
12	Harfandi	Yes	Ms.Office, AutoCAD, Google Earth, E-gov, Internet	Youtube, browsing	Yes	Yes	Average	9 - 11	Yes	Shutdown	> 15	1 - 5	No	Once in a week	Scan Virus, Deleted unecessary software, deleted cache	Yes

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
13	Ika Marillu S	Yes	Ms.Office, Internet, E-gov	Facebook, Music	No	Little	Not really	9 - 11	Yes	Shutdown	5 - 10	< 1	Yes, not much	Never	Never	Strongly no
14	Kartika Dwi Paramitha	Yes	Ms.Office, Corel Draw,Google Sketch Up, Adobe Photoshop, E-gov, Internet, Email	Music, Film,	No	Yes	Not Really	9 - 11	Yes	Shutdown	10 - 15	5 - 10	Yes, not much	Once in a month	Scan virus	No
15	Rio	Yes	Ms.Office, E-gov, Internet, AutoCAD, Google Earth	Facebook, Music	Yes	Yes	Average	9 - 11	Yes	Shutdown	< 5	1 - 5	Yes, little	Once in a month	Scan Virus, Deleted unecessary software, deleted cache	No
16	Chairina Okta	Yes	Ms.Office, Internet, E-gov, Email	Music	Tidak	Yes	Not really	< 9	Yes	Shsutdown	5 - 10	1 - 5	Yes, little	Never	Cleaning up cache and history	No
17	Pramuda Alif Firdausy	Yes	Ms.Office, Cad, Hec, SAP, E-gov, Internet	Games, music,film, youtube	Yes	Yes	Average	< 9	Yes	Shutdown	< 5	5 - 10	Yes, a lot	Once in a week	Scan virus, deleted cache and history	Trial and Error

No	Name	Inten sity	Application	Others	Understand the Specification	Kno wled ge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average documen t size (MB)	Any other data	Frequency of cleaning up files	General mainten ance	Overcom e simple trouble
18	Hana Sagiastu Firdaus	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth	Youtube, winamp	Yes	Yes	Average	9 - 11	Yes	Shutd own	10 - 15	> 10	Yes, Not Much	Yes, once a day	Scan virus, deleted unecessa ry software	Yes
19	Ulfatul Bidayah	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth, E-gov	Browsing	Yes	Yes	Average	9 - 11	Yes	Shutd own	> 15	5 - 10	Yes, a lot	Yes, once a week	Cleanin g up cache and history	No
20	Vera Maya Andini	Yes	Ms.Office, E-gov, ArcGIS	Youtube, facebook, browsing	Yes	Yes	Average	< 9	Yes	Shutd own	< 5	1 - 5	Yes, little	Yes, once a day	Scan virus	Yes
21	Bima Bella Permana	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth, Minitab, Expert choice	Games, facebook, bbm, web whatsapp	Yes	Yes	Average	11 - 13	Yes	Shutd own	> 15	> 10	Yes, little	Yes, once a week	Cleanin g up cache and history	Very capable
22	I Made Putra Darma Wijaya	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth, E-gov	Music, spotify, browsing	Yes	Yes	Average	9 - 11	Yes	Shutd own	5 - 10	5 - 10	Yes, Not Much	Never	Cleanin g up cache and history, deleted unecessa ry software	Yes

No	Name	Inten sity	Application	Others	Understand the Specification	Kno wled ge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average documen t size (MB)	Any other data	Frequency of cleaning up files	General mainten ance	Overcom e simple trouble
23	Leryan Dona Dony	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth, E-gov	Video Player, Browsing	Yes	Yes	Advanced	9 - 11	Yes	Shutd own	> 15	> 10	Yes, a lot	Yes, once a day	Cleanin g up cache and history	Very capable
24	Qurrata A'yun	Yes	Ms.Office, ArcGIS, AutoCAD, Google Earth, E-gov	Games, music, browsing	Yes	Yes	Average	9 - 11	Yes	Shutd own	10 - 15	> 10	Yes, Not Much	Yes, once a day	Scan virus	Yes
25	Madin Putra	Yes	Ms.Office, E-gov, Internet, Email	Music, browsing	Yes	Yes	Average	9 - 11	Yes	Shutd own	> 15	< 1	Yes, Not Much	Yes, once a day	Scan virus, cleaning up cache and history	Yes
26	Astri Paratina Dewi	Yes	Ms.Office, E-gov, Paradox data editor, open office text, Internet	Facebook, Line, Web WhatsApp, browsing	Yes	Yes	Average	> 13	Yes	Shutd own	10 - 15	< 1	No	Never	Scan virus	No
27	Alvian Chanasal Mubbaroq	Yes	Ms. Office, Internet, E-gov, Email	No	Yes	Yes	Advanced	> 13	Yes	Shutd own	> 15	1 - 5	Yes, Not Much	Once a month	Deleted unneces sary software , deleting cache and history	Very capable

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
28	Eka Soelastri	Yes	Ms. Office, Internet, E-gov, Email	Facebook	No	Yes	Average	11 - 13	Yes	Shutdown	5 - 10	5 - 10	No	Once a week	Scan virus and spyware	Trial and Error
29	Anis Nur Samsiati	Yes	Ms. Office, Internet, E-gov, Email	No	Yes	Yes	Average	11 - 13	Yes	Shutdown	5 - 10	5 - 10	No	Once a week	Scan virus	Trial and Error
30	Karlina Winaryanti	Yes	Ms. Office, Internet, E-gov, Email	No	No	Yes	Average	11 - 13	Yes	Shutdown	> 15	> 10	Yes, Not Much	Never	Scan virus	No
31	Atika Hanum Sari	Yes	Ms. Office, Internet, E-gov, Email, Ms. Visio	No	Yes	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	< 1	Yes, little	Never	Deleted unecessary software, deleting cache and history	Trial and Error
32	Reza Santa Pratiwi	Yes	Internet, GRMS, Email, E-gov	No	Yes	Yes	Average	9 - 11	Yes	Shutdown	> 15	1 - 5	Yes, little	Once a month	Scan virus	Trial and Error
33	Eny Hartati Endrasari	Yes	Ms. Office, E-gov, internet	Music	Yes	Yes	Average	11 - 13	Yes	Shutdown	5 - 10	< 1	Yes, little	Never	Scan virus	Trial and Error
34	Luciana Utami Dewi	Yes	Ms. Office, Internet, E-gov, Email	No	No	Yes	Average	11 - 13	Yes	Shutdown	> 15	1 - 5	No	Once a month	Scan virus, deleted unecessary software,	No

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
															deleting cache and history	
35	Iin Widiastutik	Yes	Ms. Office, Internet, E-gov, Email	No	No	A little	Average	11 - 13	Yes	Shutdown	> 15	< 1	No	Once a month	Scan virus	No
36	Mochammad Lutfi Yusuf	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing	Yes	Yes	Average	9 - 11	Yes	Shutdown	> 15	> 10	No	Once a month	Scan virus, deleted uncessary software	Yes
37	Ervy Puspitaningrum	Yes	Ms. Office, Internet, E-gov, Email, Internet	No	Yes	Yes	Average	9 - 11	Yes	Shutdown	> 15	< 1	No	If remember	Deleted unecessary software, deleting cache and history	Trial and Error
38	Bagus Wahyu Purnomo	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music, Film	Yes	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	1 - 5	Yes, Not Much	Once a month	Scan virus	Yes
39	Catur Budi Utami	Yes	Ms. Office, Internet, E-gov	No	No	Yes	Average	11 - 13	Yes	Shutdown	< 5	1 - 5	No	Never	Deleting Unecessary Software	No
40	Ony Tri Prasetyo	Yes	Ms. Office, Internet, E-	Browsing, Online	Yes	Yes	Average	> 13	Yes	Shutdown	> 15	1 - 5	Yes, little	If remember	Disk Defrag	Yes

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
			gov, Email, Internet	shopping, news												
41	Achmad Syarifudin	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, News	Yes	Yes	Average	11 - 13	Yes	Shutdown	< 5	1 - 5	No	Never	Never	Strongly no
42	Desy F	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music	Yes	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	< 1	Yes, little	Once a month	Scan virus, deleting unecessary software	No
43	Nina Anggreni	Yes	Ms. Office, Internet, E-gov, Email, Internet	No	Yes	Yes	Not really	11 - 13	Yes	Shutdown	5 - 10	< 1	No	Once a month	Scan virus	No
44	Putri Perwira	Yes	Ms. Office, Google earth, Internet, E-gov	Browsing, News	No	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	5 - 10	Yes, little	Once a week	Scan virus, deleing unecessary software, deleing cache and history	Yes
45	Sumarno Hendrawan	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing	Yes	Yes	Advanced	11 - 13	Yes	Shutdown	5 - 10	< 1	Yes, Not Much	Once a week	Deleting cache and history	No
46	Nani Pertiwi	Yes	Ms. Office, Internet, E-	Social media, youtube	Yes	Yes	Average	11 - 13	Yes	Shutdown	5 - 10	< 1	No	Once in three month	Disk defrag, deleting	Trial and Error

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
			gov, Email, Internet												unecessary software, deleting cache	
47	Ivan Wijaya	Yes	Ms. Office, Internet, E-gov, Email, Internet	No	Yes	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	< 1	Yes, Not Much	Once a week	Scan virus, deleting unecessary software, deleting cache	Very capable
48	Retno	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, News	No	Yes	Not really	9 - 11	Yes	Shutdown	5 - 10	< 1	No	If remember	Scan Virus	Trial and Error
49	Siti Nurhasanah	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing	No	Yes	Not really	9 - 11	Yes	Shutdown	5 - 10	1 - 5	Yes, Not Much	If remember	Scan virus, deleting unecessary software	Trial and Error
50	Ditha	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music	No	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	1 - 5	Yes, little	Once a week	Scan virus	Yes
51	Nuralaili Mauliddah	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music, youtube, browsing	No	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	5 - 10	No	Once a week	Scan virus, deleting unecessa	Trial and Error

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
															ry software	
52	Antono	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, social media	Yes	Yes	Not really	9 - 11	Yes	Shutdown	5 - 10	< 1	No	Once a day	Scan virus, deleting unecessary software, deleting cache	Trial and Error
53	Naratama Haryo Pamungkas	Yes	Ms. Office, Internet, E-gov, Email, Internet, GRMS	Music	Yes	Yes	Not really	9 - 11	Yes	Shutdown	> 15	< 1	Yes, Not Much	Never	Scan virus	Yes
54	Artiningsih	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music	Yes	Yes	Not really	9 - 11	Yes	Shutdown	5 - 10	< 1	Yes, little	Once a month	Scan virus	No
55	Trivianty Sulistyarini	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music	Yes	Yes	Average	9 - 11	Yes	Shutdown	5 - 10	< 1	Yes, little	Once a month	Scan virus	No
56	Andi Fiksi	Yes	Ms. Office, Internet, E-gov, Email, Internet, AutoCAD, Sketch Up, Corel Draw, Photoshop	Music, Film	No	Yes	Average	> 13	Yes	Shutdown	5 - 10	5 - 10	Yes, Not Much	If remember	Scan virus, deleting unecessary software, deleting cache	Trial and Error

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
57	Kuat Djoko Sambodo S.Sos	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music, Social media, news	No	A little	Not really	> 13	Yes	Pressing Power Button	5 - 10	1 - 5	Yes, little	Never	Deleting Unecessary Software	Trial and Error
58	Christian N A	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, News, Youtube, Social Media	No	A little	Not really	> 13	Yes	Shutdown	5 - 10	5 - 10	Yes, Not Much	Once a week	Scan virus, deleted unecessary software	Trial and Error
59	Myrna A Aditya	Yes	Ms. Office, Internet, E-gov, ArcGIS, AutoCAD, Sketch Up	Music	Yes	Yes	Average	11 - 13	Yes	Shutdown	> 15	1 - 5	Yes, Not Much	Once a month	Deleted unecessary software, deleting cache and history	Yes
60	Arum Safitri Rahayu	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music	No	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	1 - 5	Yes, Not Much	Once a month	Deleting unecessary software	Trial and Error
61	Putut D Widanto	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, Music, Social Media	Yes	A little	Not really	> 13	Yes	Shutdown	> 15	< 1	Yes, Not Much	Once a week	Scan virus, deleting unecessary software	Trial and Error
62	Dian Anggraini	Yes	Ms. Office, GRMS, E-gov, Video	Music, video,	Yes	Yes	Average	11 - 13	Yes	Shutdown	10 - 15	1 - 5	Yes, Not Much	Once a month	Scan virus,Di	Yes

No	Name	Intensity	Application	Others	Understand the Specification	Knowledge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average document size (MB)	Any other data	Frequency of cleaning up files	General maintenance	Overcome simple trouble
			Player, Internet	Media Social											sk Defrag	
63	Tiara Elfita	Yes	Ms. Office, Internet, E-gov, Email, Internet	Music, film, browsing	No	Yes	Average	> 13	Yes	Shutdown	> 15	< 1	Yes, Not Much	Never	Scan virus, deleting cache and history	Trial and Error
64	Ifrohah	Yes	Ms. Office, Internet, E-gov, Email, Internet	Browsing, youtube	Yes	Yes	Average	> 13	Yes	Shutdown	5 - 10	< 1	No	Never	Scan virus, deleting unecessary software	Trial and Error
65	Hadi Ismanto	Yes	Ms.Office, Internet,E-gov	Social Media, games	Yes	Yes	Average	9 - 11	Yes	Shutdown	< 5	1 - 5	Yes, little	Once a day	Scan virus	Yes
66	Beta	Yes	Ms.Office, E-gov, Internet, AutoCAD, Ms.Visio	itunes	Yes	Yes	Average	9 - 11	Yes	Shutdown	10 - 15	> 10	Yes, little	Once a month	Scan virus, disk defrag, deleting unecessary software, deleting cache and history	Yes
67	Dhoni	Yes	Ms. Office, E-gov, Internet	No	No	Yes	Not really	11 - 13	Yes	Shutdown	5 - 10	1 - 5	No	Once a month	Scan virus and spyware	No

No	Name	Inten sity	Application	Others	Understand the Specification	Kno wled ge	Technology Knowledge	Daily usage (hours)	Turn off	Shut-down	How often save the data	Average documen t size (MB)	Any other data	Frequency of cleaning up files	General mainten ance	Overcom e simple trouble
68	Benny Iriawan	Yes	Ms. Office, Internet, E-gov	Music	Yes	Yes	Average	9 - 11	Yes	Shutd own	10 - 15	1 - 5	Yes, little	Once a month	Scan virus, disk defrag, deleting unecessa ry software	Yes
69	Akhmad Yusuf	Yes	Ms. Office,Intern et, E-gov	No	Tidak	Yes	Average	11 - 13	Yes	Shutd own	10 - 15	1 - 5	Yes, Not Much	Never	Scan virus	No
70	Cicik Herawati	Yes	Ms. Office,Intern et, E-gov	Social media, browsing	Yes	Yes	Average	9 - 11	Yes	Shutd own	5 - 10	1 - 5	No	Once a week	Scan virus and spyware	Yes

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Appendix 4

Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Ardianti Oktora	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2GB	4	2	3	1	2	4	2	2
Amirudin	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	4	4	3	4	3	4	4
Ismawati	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	1	2	3	5	1	2	3	1
Muhammad Irfan	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	5	2	2	2	2	4	2	2
Kustiningsih	Administration Staff	Acer	X173W	Core 2 Duo	2.6	1 GB	4	3	3	3	3	4	3	2
Esty	Mondalev Staff	Acer	Aspire	Core i3	2.9	2 GB	4	2	3	2	2	4	2	2
M. Ali Rakhmadi	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	2	2	2	2	3	4	2
Mochamad Syaiful Arif	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	5	1	1	1	2	5	2	2
Andi A	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	2	2	2	2	2	3	2
Titis Ratih	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		5	3	3	1	5	2	2	1
Syamsul Arifin	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	4	4	3	3	4	3	3
Harfandi	Mondalev Staff	Lenovo	Think Centre	Core i3	2.92	2 GB	4	2	2	2	2	4	2	2
Ika Marillu S	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		5	3	3	1	2	2	2	1

Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Kartika Dwi Paramitha	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.86	4 GB	5	3	3	3	3	4	2	2
Rio	Mondalev Staff	Lenovo	Think Vision	Core 2 Duo	2.66	1.5	5	5	4	3	4	2	4	2
Chairina Okta	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	2	2	2	2	4	2	2
Pramuda Alif Firdausy	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	3	4	3	2	1	3	3	2
Hana Sagiastu Firdaus	Planner Staff	Lenovo	Thinkcentre	Core i5	3.2	2GB	5	3	3	1	3	4	2	2
Ulfatul Bidayah		Lenovo	Thinkcentre	Core i3	2.92	2 GB	4	2	2	3	2	4	2	3
Vera Maya Andini		HP	ProOne 400	Core i7	3.6	8 GB	5	2	2	2	2	5	2	2
Bima Bella Permana	Planner Staff	Lenovo	C 360	Core i3	2.9	2 GB	4	4	5	3	5	3	3	3
I Made Putra Darma Wijaya		Lenovo	C 360	Core i5	3.2	2 GB	4	3	5	1	1	3	4	3
Leryan Dona Dony		Lenovo	HS30S	Core i7	3.6	4 GB	5	4	4	1	1	5	1	1
Qurrata A'yun		Lenovo	Thinkcentre	Core i5	3.27	2 GB	4	3	2	1	1	4	2	1
Madin Putra	Planner Staff	Lenovo	AIO	Core i3	2.97	2 GB	4	3	3	3	3	3	4	3
Astri Paratina Dewi	Administration Staff	Lenovo	Thinkcentre	Core i3	2.97	2 GB	5	3	3	4	1	5	2	1
Alvian Chanasal Mubbaroq	Planner Staff	Lenovo	Thinkcentre	Core i5	3.2	2 GB	5	1	1	1	1	5	4	1
Eka Soelastri	Mondalev Staff	AOC	716Vwy	Dual Core		2 GB	4	4	4	2	3	3	4	3

Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Anis Nur Samsiati	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	4	4	2	3	4	5	3
Karlina Winaryanti	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	4	5	3	3	4	3	5
Atika Hanum Sari	Planner Staff	Lenovo	Thinkvision	Intel Core Duo	2.66	2 GB	5	4	4	3	3	4	5	4
Reza Santa Pratiwi	Mondalev Staff	AOC	&16Vwy	Intel Pentium Dual	2.1	1 GB	3	5	5	4	4	3	4	3
Eny Hartati Endrasari	Mondalev Staff	LG	L177WSB	Core 2 Duo	2.6		1	3	2	2	3	3	3	4
Luciana Utami Dewi	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	4	4	2	4	3	3	4
Iin Widiastutik	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	1 GB	4	4	3	2	3	4	3	2
Mochammad Lutfi Yusuf	Mondalev Staff	IBM		Intel Core 2 Duo	2.66	2 GB	4	4	4	2	2	3	4	3
Ervy Puspitaningrum	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	5	5	1	4	3	5	5
Bagus Wahyu Purnomo		LG	L177WSB	Intel Pentium Dual	2.4	1 GB	5	4	4	3	4	3	4	3
Catur Budi Utami	Administration Staff	BENQ	152WA	Pentium 4	2.2	512 MB	4	5	4	2	2	4	4	1
Ony Tri Prasetyo	Mondalev Staff	Lenovo	Thinkcentre	Core i3	2.9	2 GB	5	3	3	1	1	4	3	1
Achmad Syarifudin	Mondalev Staff	Lenovo	Thinkvision	Dual Core	2.4	1 GB	3	3	4	3	2	3	3	3
Desy F		Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	4	3	1	2	4	4	3

Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Nina Anggreni	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	3	3	3	3	4	4	3
Putri Perwira	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	4	3	4	3	4	3	4
Sumarno Hendrawan	Administration Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		5	1	1	1	1	4	1	1
Nani Pertiwi	Head of Governance Apparatus and Citizenship Sub-section	Lenovo	Thinkcentre	Core i5	3.2	2 GB	5	3	3	1	1	5	3	2
Ivan Wijaya	Head of Business Development Sub-section	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	5	2	1	1	2	4	5	1
Retno	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	3	3	3	3	4	3	2
Siti Nurhasanah	Mondalev Staff	View Sonic	VA1716w	Pentium 4	2.2	512 MB	4	2	4	1	2	4	4	2
Ditha	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	4	4	2	4	4	4	2
Nuralaili Mauliddah	Mondalev Staff	View Sonic	VA1716w	Pentium 4	2.2	1.5 GB	4	3	5	2	4	4	5	1
Antono	Mondalev Staff	Lenovo	Thinkvision	Core 2 Duo	2.67	2 GB	4	2	2	2	2	4	2	2
Naratama Haryo Pamungkas	Mondalev Staff	Lenovo	Thinkcentre	Core i5	3.2	2 GB	4	3	3	2	2	4	3	2
Artininingsih	Mondalev Staff	Lenovo	Thinkcentre	Core i5	3.2	2 GB	4	4	3	3	4	4	3	3

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Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Trivianty Sulistyarini	Mondalev Staff	Lenovo	Thinkcentre	Core i3	2.9	2 GB	4	4	3	2	4	3	3	2
Andi Fiksi	Mondalev Staff	Lenovo	Thinkcentre	Core i5	3.2	2 Gb	5	4	4	2	2	4	3	2
Kuat Djoko Sambodo S.Sos	Planner Supporting Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	4	4	4	4	2	1	4
Christian N A	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.66	2 GB	4	3	3	3	3	4	4	2
Myrna A Aditya	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.8	2 GB	4	4	4	2	3	2	4	2
Arum Safitri Rahayu	Mondalev Staff	Lenovo	Thinkcentre	Core i3	2.9	2 GB	4	2	2	2	2	4	2	2
Putut D Widanto	Planner Staff	Lenovo	Thinkvision	Core 2 Duo	2.67		4	3	3	1	1	4	1	1
Dian Anggraini	Planner Staff	Lenovo	Thinkcentre	Core i5	3.2	2 GB	5	3	2	2	2	4	2	2
Tiara Elfita	Planner Staff	HP	Pavillion	Core i5	3.2	4 GB	5	2	2	1	1	5	3	4
Ifrohah	Mondalev Staff	HP	Pavillion	Core i5	3.2	4 GB	4	3	2	2	1	4	2	2
Hadi Ismanto		Lenovo	Thinkvision	Core 2 Duo	2.66	1 GB	4	3	3	3	3	4	3	3
Beta	Planner Staff	Acer	Aspire	Core i3	2.97	2 GB	4	3	3	3	3	4	3	3
Dhoni	Mondalev Staff	LG	Flatron L177WSB	Core 2 Duo	2.6	1 GB	2	4	3	4	3	4	4	3
Benny Iriawan	Mondalev Staff	Acer	X213H	Core 2 Duo	2.6	4 GB	5	3	3	3	3	5	4	3
Akhmad Yusuf	Head of Finance Sub-division	Lenovo	Think Centre	Core i3	2.9	2 GB	5	3	2	2	3	4	4	2

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Name	Function	Brand	Type	Processor	Speed (GHz)	RAM	Easy to use	Slow respond	Oftenly not responding	Sudden death	Easily get hot	Appropriate needs	Memory full	Blank Screen
Cicik Herawati	Financial Staff	Acer	X213H	Core 2 Duo	2.67	2 GB	5	1	2	2	2	5	2	2

Appendix 5

BERITA ACARA KEGIATAN

Hari/ Tanggal   : 8/6/2016

Tempat   : Marc Computer

Pelaksana Kegiatan   : Nola Vila Violita

Penerima Kegiatan   : Jus Efendi

Ringkasan Kegiatan   :

▫ Memilih komputr untuk kantor ?
      ᐡ untuk kerja apa ? - Hanya word excel ppt etc (minim core 2 duo
                      - grafis (core i3 paling minimum)
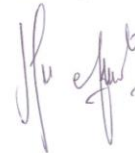   ᐡ utamakan VGA

▫ Perawatan untuk komputer ?
      ᐡ yang paling umum dan bisa dilakukan oleh pengguna komputer
         secara umum.

1. Scan   1. Bersihtan CPU
2. Defrag   2. Arus stabil.
3. Ragin membersihkan file
4. Jangan menumpuk history
5. Hapus software2 tidak digunakan
   (working behind background)

Surabaya, ...

Penerima Kegiatan

(   )

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RESEARCH ACTIVITIES REPORT

Day/Date : 9/6/2016
Place : Harisma Computer, Hi-Tech Mall
Participant : Nola Vila Violita
Acquiescent : Sony. W
Summary :

- Memilih komputer untuk kantor ?
  - standard → word, excel, ppt, pdf, software ringan (Core 2 Duo)
  - Med → software medium + berat (Core i3 / Core i5)
  - High → gamer, graphic tinggi (core i7)
  - grafis → cari dg VGA

- Perawatannya
  - Bersihkan CPU
  - Stabilkan arus
  - Jangan terkena air.

- SCAN VIRUS (setiap minggu)
  DEFRAG (setiap 6 bulan)
  RESTORE (kalau diperlukan)
  CC Cleaning. (minimal satu kali seminggu)

Surabaya, ...

Acquire

(Sony. W)
031 - 5347333

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RESEARCH ACTIVITIES REPORT

Day/Date : 9/6/2016
Place : Lenovo, Ground Floor, D.55 (Hi-Tech Mall)
Participant : Noia Vila Violita
Acquiescent : Aldi Pratama
Summary :

☑ Memilih komputer untuk kantor?
   ↳ High performance (tidak perlu) → biasanya untuk gamer)
   ↳ Standard performance (untuk kantor)
      ↓
      Core 2 duo cukup.
   ↳ grafis → minim core i3
      ↳ cari yang ada VGA

☑ Perawatan komputer
 - Scan   - bersihkan CPU
 - Defrag   - Stabilkan arus
 - System restore   - gunakan secara benar
 - CC Cleaning → junk files (turn on/off)
 - bersihkan history   - jangan sampai terkena
 - bersihkan software   air

Surabaya, ...

Acquire

(Aldi Pratama   )
031-535 7849

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BERITA ACARA KEGIATAN

Hari/ Tanggal : 8/6/2016
Tempat : Fish Computer, Hi-Tech Mall
Pelaksana Kegiatan : Nola
Penerima Kegiatan :
Ringkasan Kegiatan :

⟹ Memilih Komputer — High performance (gamer)
— Office.

⟹ Komputer kantor ?
  ↳ Pekerjaan ringan → Core 2 duo cukup.
      Hanya word, excel, etc.
  ↳ Medium → core i3
  ↳ High → core i5
  ↳ gamer, grafik tinggi. → Core i7.

⟹ Perawatan komputer
  ↳ scan (1 minggu)
  ↳ defrag (± 6 bulan)
  ↳ bersihkan file (/bulan)
  ↳ bersihkan software (±4 bulan)
  ↳ bersihkan CPU
  ↳ stabilkan arus listrik
  ↳ jauhkan dr air

Surabaya, ...

Penerima Kegiatan

(Dedy)
085851202107.

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BERITA ACARA KEGIATAN

Hari/ Tanggal   : 8/6/2016
Tempat   : Arbhy Computer
Pelaksana Kegiatan   : Nola
Penerima Kegiatan   : Bapak Gatot . W
Ringkasan Kegiatan   :

☑ Bagaimana memilih komputer untuk kantor?
   ↳ software berat, intensitas, kebutuhan ⟨ gamer
                                            ⟨ office

☑ Komputer untuk kantor → word, excel, ppt, pdf, (core 2 duo cukup)
                            ↳ Software berat? ── core i3
                                               ── core i5
                            ↳ untuk grafis → (minimum core i3 dg VGA)

☑ Komp. lemot + not responding
   ↳ tdk pernah dibersihkan ⟨ file
                            ⟨ history
   ↳ Harus ada perawatan.
        Soft.
        (gampang: scan defrag. hapus file
                   hapus history)
        Hard:
        (gampang: no water, arus listrik,

Surabaya, ...

Penerima Kegiatan

(Gatot . W.   )

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CHAPTER VII
CONCLUSION AND SUGGESTION

This chapter contains the conclusion from the research regarding the objectives of the research. This chapter will also describe the suggestion regarding the future research.

7.1   Conclusion

Several point that can be conclude from this research are:

1. In order to understand the ideal need of computer technology in SKPD while considering the job description of each function, a matrix of level of technology is made. The matrix itself deployed from several steps. The first step is the deployment of all competencies needed by all of the functions within the organization. Second step is the deployment of sub-competencies from the competencies. The second step can be eliminated according to the necessity of the organization or SKPD. The third step is the deployment of the application needed for each sub-competencies or competencies itself. From the deployment of the application then an assessment done for each functional job to the application needed using likert scale. Besides, the assessment also done to the another factor which is the necessity of multitasking needed by each functional job structure. The score also using the likert scale. Both of this factor obtain through the deep interview done with several technicians and computer expert regarding factors needed in considering the suitable level of technology for each functional job structure workload. Besides an assessment to the level of technology, the second improvement done in order to measure the ideal needs of a computer technology in each SKPD is the mechanism of re-check and reviewed using technology assessment in order to add another consideration regarding the suitability of the proposal in accepting the allocation of new computer. This mechanism helps the decision maker in decided which proposal that need to be granted and which proposal that basically should be turn down as it does not necessary in getting a new computer.

2. In order to increase the usage of the computer in SKPD, there are two point that needed to be optimize. First is the deployment or the allocation of the computer. The deployment of the computer can be optimized by considering the level of technology according the level of technology for certain function. Optimizing the deployment of the computer will increase the utilization of the computer in-term of technology usage. Therefore, in order to increase the usage of computer in SKPD, optimization to the deployment of computer according to the level of technology counted as the first factor. The second one is the maintenance of the computer asset for both hardware and software. According to the direct survey and questionnaire that distributed to all of the computer user in BAPPEKO the lack of maintenance for the computer in BAPPEKO increasing the number of complaint regarding their computer. Therefore, several maintenances that can be done by general user in order to keep the performance of the computer needed to be done. Simple maintenance for hardware that can be done by the user such as keeping the computer away from the water and keeping the stability of the electronic source. While, the simple maintenance for the software that can be done by general user such as scan virus, disk defrag, cleaning up useless file, and cleaning up useless software.

3. Procurement unit is one party in decision maker that also responsible in decided whether the proposal of computer asset will be granted or not. Referring to the recommendation in standard operating procedure for proposing new asset and also allocating the computer unit, there several improvements that done in order to improve the function of the procurement unit. First is the SKPD review's regarding the proposal of new asset. Using this review and form procurement unit can conduct a deeper analysis regarding the condition of the asset and whether the asset is definitely need to be replaced. Second, is the standard operating procedure related to the allocation of the computer that can leads to the downgrade mechanism. Downgrade mechanism can be done within the organization or SKPD or between SKPD. The mechanism of downgrade system between SKPD will involving procurement unit as one of the reviewer. This step is done in order

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to avoid any wrong placement related to the downgraded asset, as the procurement unit is aware about the condition of each SKPD in term of computer asset. Both of these mechanism done in order to improve the function of procurement unit in fulfill their responsibilities.

7.2   Suggestion

This sub-chapter stated about several suggestions that can be obtain from the research that already conduct. The suggestions are:

1. The matrix of level of technology that used in the generic recommendation still using an excel dashboard. However, this assessment should be attach into the internal system that used among the organizations, so that the usage of this mechanism can be concentrate in one system.

2. The recommendation regarding the maintenance for both hardware and software will be more robust if it is added with more complex situation based on the current problem that commonly appear among the organizations. Besides, the system should be added with a simple handling method that can be implemented by a general user. However, in order to make a robust list regarding any maintenance that can be done based on the current situation, there need a longer period for the field observation.

3. A simple guidance in order to decide whether the technology of the computer or the hardware of the computer is already obsolete need to be done by an expert judgement which already include the usual event that happen in SKPD.

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BIOGRAPHY

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When she is not preoccupied by college assignment or organization responsibilities, she spending her time travelling with her community MAHAPATI ITS (nature devotee community). She spends a great deal of time hiking, rafting, wall climbing, tracking, going to the beach or going to other natural places around Indonesia. Her love in nature makes her interested in nature conservation, community development, and other social activities.

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