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FINAL THESIS

APPLYING SAP ERP SYSTEM IN BUSINESS PROCESSES
CASE CITY OF TAMPERE

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ABSTRACT

This thesis was made for City of Tampere. The main goal of the thesis was to have a good understanding of the ERP implementation process of the organization and current situation of its new ERP system. The other objectives were to specify in which areas of the system need to be improved by conducting a survey and provide future development recommendations to the organization based on the survey result.

Since this case study concerned certain technical knowledge areas that might be unfamiliar, the theoretical part of the thesis needed to introduce these terms such as ERP system, SAP solution and Siemens Supply. This part started with explanation of ERP system, description of the ERP implementation process and comparison of its advantages and disadvantages, which gave the good background understanding of the ERP system; later on, this part introduced ERP solutions and ERP vendors in today's market, SAP vendor and SAP solution in detail.

City of Tampere is a public organization; most of the background information of the organization which included company structure, business process, business operation models and ERP system were collected from its public access. This thesis studied the different levels of SAP users' experiences of using SAP system in their work and their evaluations of the SAP implementation process by conducting a survey in City of Tampere. The outcomes of the research were analyzed by SPSS statistic tool, and the results were analyzed and summarized in sub-sections based on the questionnaire. As the conclusion of the thesis, several recommendations were proposed to solve the problems found from the research results.

Key words: ERP system, ERP implementation, ERP solution, SAP, City of Tampere

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1. Introduction

1.1 Research Background

ERP improves productivity, which is the main reason why especially large sized companies are keen to study about it and adopt the ERP system in their business processes. The key characteristic of the ERP system is integration, once an ERP system is implemented, each department in a company will use the same database; share the same data that immediately improve the communication among the different departments as a good start.

City of Tampere is one of these large organizations that launched a new ERP system in the beginning of year 2006, and the system development was extended till year 2007. The new ERP system in City of Tampere is defined as a unified business system that provides all business functions for the end-to-end business process. The functional goals of applying ERP solution could be characterized as centralization, harmonization, and self-service.

1.2 Purpose of the Research

The purpose of this research was studying ERP system in City of Tampere by examining different levels of SAP users' experiences of using SAP in their work and their evaluations of the SAP implementation process in order to analysis the current situation of SAP ERP system. According to their functional roles, the users were divided into three groups, which were SAP basic end-users, SAP controllers and SAP managers. Finding out what kind of expectations they had before the new ERP system implemented and what kind of evaluations they had after the SAP system implementation process completed. Combined these findings together and analysis the outcomes, as addition; found out the big gaps among their opinions which reflected the potential ongoing problems within the organization.

1.3 Research Questions

The questionnaires designed for three different target samples, and separated into three sections: Implementation process section; Current SAP and its future development section; and Training section. Started with identifying the user's role of the respondents and then analyzing the responses among different level of SAP users, which was the essential method of this research that used.

In the Implementation process section the questions concerned their involvement during the SAP project, and their evaluations of completing the SAP project process. In Current SAP and its future development section, the objects of this part were trying

to find out their current involvement of SAP system in the work; discover the changes in the working environment after the SAP project; to discover the improved areas in the new SAP system from their points of views; and further on, to analyze their suggestions for the future development of the SAP system in the organization. At the Training section, to identify the provided training courses and to reveal the current needs of the training subjects and preferable training methods.

1.4 Research methods

There are certain aspects that were considered in order to choose a proper research method to carry out the thesis. Basically, four types of research methods are applied: Literature and Internet resources reading method, Interviewing method, Case study method and Survey method.

1.4.1 Literature and Internet resources reading

The case study has touched certain technical knowledge areas such as ERP, ERP implementation, which could be unfamiliar to the readers. Considered the facts that there were many deep business knowledge areas and IT terms involved in, the author needed to collect related data and information to give better explanations of each and explained in the technical background introduction part of the thesis. The purpose of the technical background introductions was aiming to provide enough information to readers for better understanding the whole thesis. The information was collected from the Internet and textbooks.

1.4.2 Interviewing

An interview is a qualitative research method for receiving better and more intensive resources. Usually interviews are personal formed research methods, especially in the personal interview; interviewer can get the answers directly and possible to continue with follow up questions. In this case, the purpose of interview was for collecting the background information of City of Tampere and its ERP SAP system implementation process. Interviewee from SAP management level was interviewed, and the interview was taken place in November 2008 in City of Tampere. All the questions used were open questions and the topics were:

1. The definition of City of Tampere? What are the business areas?
2. Why City of Tampere needed a new ERP system?
3. What kind of ERP system did City of Tampere have before?
4. What kind of ERP system does City of Tampere have at moment?
5. Why City of Tampere chose SAP, why not others such as Oracle or Infor global solution and so on?
6. Why Siemens Supply? What kind of support they offered?
7. How was the SAP implementation process? How long it took for example?

8. Was it difficult to transfer the data from the old ERP system to the new one?
9. Were there any obstacles during the new ERP system implementing process?
10. What kinds of training courses were provided for the end-users?
11. More in detail about SAP implementation in City of Tampere.
12. Did the new system cause any changes inside the organizations, such as in workflow and working environment? What are they?
13. Is City of Tampere satisfied with SAP ERP system?
14. What are the current plans for the future development of the new ERP system?

1.4.3 Case study

A case study defined to be an intensive study of a single group, incident, or community; collecting data, analyzing information, and reporting the results. The case study is the systematic way of looking at the events; examine the inter-relationship of all variables in order to find out a comprehensive understanding of the situation as possible. Researchers do not need to find out the generalized truth, nor be looking for cause-effect relationships, but instead, researcher's emphasis to explore the reasons why the instance happened as it did. (Case study 2009, 12.03.09)

In this case study, the author studied the different levels of SAP users' understanding of their new ERP system, found out what kind of expectations they had before the new ERP system implemented and what kind of evaluations they had after the SAP solution implementation process complete. Combining these findings together and analyzing the outcomes enabled to find out current situation of new ERP system in City of Tampere.

1.4.4 Survey

A survey is needed during the case study and will be conducted by publishing the questionnaires to target groups online. A questionnaire is more of a quantities research method for receiving bigger amount of responses from the targets. Nowadays, e-survey or mail survey is one of the most popular survey methods because e-survey can reach a wide number of the people with relatively low cost and time. It very convenient for people to response and fill the questionnaires at any time and any place they like during the survey period, which optimizing the chance to reach the target groups. Big amount of responses will result a large quantity of data which simplifies the analysis process and produces more accurate result. (Bill Gilliam, 2000, 1-15)

In this case, the survey carried out by publishing two versions of questionnaires in the internet. Target groups were defined as three levels of SAP users in the organization. SPSS 16.0 statistic tool is used for analyzing the received data for this research.

1.5 Structure of the Research

In general, this final thesis consists of six sections. The first section, an introduction part is all about presenting the writing purpose of the thesis and the research methods used for carrying out the whole thesis. The second section is about literature reviewing of the business terms that touched up on the case study. The third section is company background introduction, which includes the company structure and company business process, and also explanation of the ERP system and its implementation process in the organization. The fourth section is the detailed information about the survey conducted during the research. The fifth section is the results analysis, which focuses on the analysis of the outcomes that carried out by a survey inside the organization. The last section is about recommendations and final conclusion that proposed to solve the problems which were recognized after the analysis of the result.

2. Technical background introduction (Literature review)

2.1 Enterprise Resource Planning Systems

2.1.1 ERP and ERP System

ERP stands for Enterprise Resources Planning. ERP is the term to describe the way to integrate data and processes from all areas of an organization into one system. In the past years, ERP system was mostly used in large sized or deep industrial types companies. Theoretically, ERP system can be used in any sized or types of business, and in fact, today ERP system are widely used not only large companies but also small to medium sized business (SMB) as well.

Integration is the key to an ERP system. Before ERP system, companies usually use different software applications as separated system to perform the business. To achieve the goal of integration, most of ERP system has to provide a minimum range of functions and integrate them into one unified database, as showed in Figure 1. (O'Leary, 2000, 27-38)

Today's ERP systems have a wide range of functions such as such as Supply Chain Management (SCM), Customer Relations Management (CRM); Manufacturing functions; Warehouse Management (WM); Human Resources (HR), and Financials functions. All these functions should fit well with companies' own database and network. In addition, software vendors are also adding value in the areas of data management, quality management, field service modules, and Internet capabilities. (ERP, 2009, 15.03.2009)

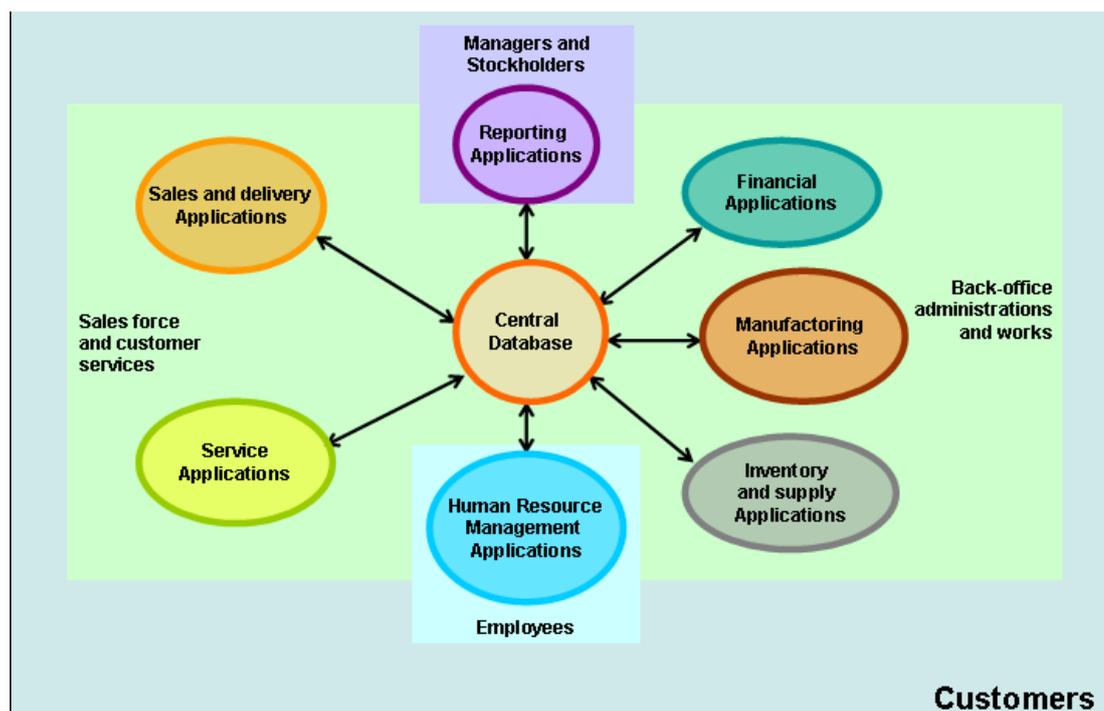


Figure 1 Integration of ERP system (O'Leary, 2000, 27-38)

2.1.2 ERP implementation

Implementation of ERP system can be complex depending on the business process of the company. (Thomas, 2001, 23) For larger companies, it takes even longer time to complete the implementing process. A good estimation of the implementation time could be few weeks for SMB companies and three months up to one year or more for larger companies. Also, implementing an ERP system is very expensive, which needs huge investment on the ERP applications and its related technical services.

When a company decides to go for an ERP system, it is better to start with screening available ERP software solutions and ERP vendors in market, choosing the best alternatives. After a more detailed evaluation of the choices the best solution is selected for the company. Good planning is the crucial step to begin the ERP implementation process. ERP project manager has a very important role during implementing ERP system. There are several critical aspects needed to be concerned in order to minimize the risk of the project.

There will be significant changes for working staff and work environment during the implementing process, so it is very important for the company to make sure that every individual is on board and participate in the ERP project to a success. (Thomas, 2001, 23-43). In practice, companies use ERP vendors or hire consultant to implement the ERP system. Consulting services, Customization services and Support services are the most common types of professional services (Norbert, 1999, 36-39).

Consulting Services (at the initial phase) is responsible from the beginning of ERP implementation till the company go live with the new system. With the help of consulting services, company could maximize the usage of ERP system. Customization services (at the extension phase) provide the help to create the customized interface and transaction code. Most of the ERP solutions are made as a core application, so there are some changes have to be done according to company's needs (Norbert, 1999, 15-17).

Support Services (at the maintenance phase) is responsible for supporting the ERP system, solving the problems related with ERP issues and its maintenance work. Figure 2 shows the movements of each stage during the ERP implementation process according the time consuming and investment costing for the company. Moving from one stage to the next will cost more investment on the application software and more time consuming for the project completing (Norbert, 1999, 17-21).

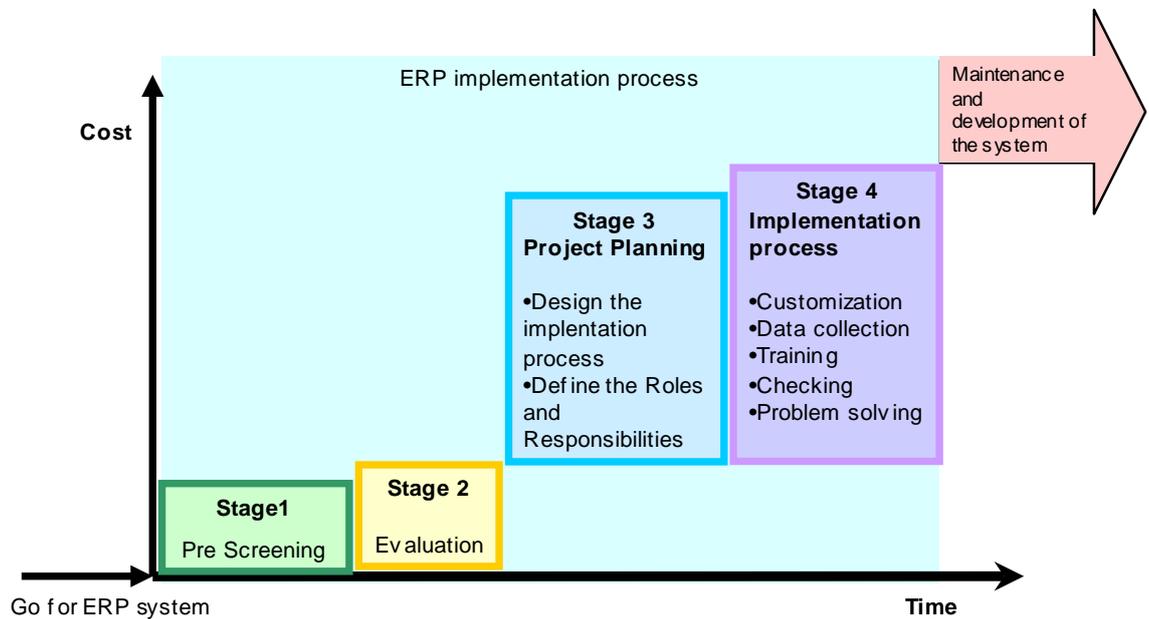


Figure 2 ERP implementation process

2.1.3 Advantage of ERP system

ERP improves productivity, which is the main reason why companies apply it into their business processes. Once an ERP system is implemented, each department in a company will use the same database and share the same data which eventually improves the communication among the different departments. For companies, improved cooperative working environment of each department and increased productivities are the desirable results (Vivek, 2000, 27-32).

Except to improve productivity, there are many other advantages that promotes for implementing an ERP system:

- Integrating all different systems into one; as soon as all different systems are integrated into one, the working environment is unified into one as well. On the other hand, it will also increase the ability to streamline different processes and workflows (Vivek, 2000, 27-32).
- Easily share the data across various departments, in ideal ERP system, there is only one database needed for the whole company, which will decrease the amount and types of software that used before that means it will be easier for the staff to share and collect the data among various departments (Exforsys 2009, 15.03.09).

- ERP improves efficiency. Different from traditional business systems, where data are processed by higher or management level users, so that could take long time for the data to arrive for the end users. ERP system provides an easy access for individual end users to the data so the work can be done more efficiently than before (Vivek, 2000, 27-32).
- Less investment. Business solution software is not cheap, and ERP system is also quite expensive to implement. But compare the total investment on ERP system to the sum of all other business solutions needed for the whole business process, the investment on ERP costs much less (Exforsys 2009, 15.03.09).
- Better tracking, ERP system allows the company to have better tracking of their product or services. Such data includes the date, place and condition etc of the products and services. It is very important to improve the quality of products for to a higher level, which improves the development of their production line and the customer service. There are many other advantages too such as better forecasting and better security features (Vivek, 2000, 27-32).

2.1.4 Disadvantages of ERP system

On the other hand, some disadvantages or obstacles are revealed during the practice of ERP system implementation. Mainly these negative issues are related with high investments to install and run, difficulties and high costs in switching to other ERP system, re-engineer the business processes, limitations of the customization, less quantities and qualities of “good data”, risk of losing the sensitive data, nonsuitability for a short-period business, need of training courses for end users (Exforsys 2009, 15.03.09).

Usually, many of these problems can be solved if sufficient investments are made and sufficient training is involved. Good skill and experienced IT consultants are very important for making the program smoothly running, and helping the working staff to adapt the new system quickly and efficiently (Exforsys 2009, 15.03.09).

2.1.5 ERP solution software in the market

There are two major categories of ERP solutions in the market, which are “Proprietary or Commercial ERP software” and “Free and Open source ERP software”. Generally speaking, companies need to buy the licenses and ownership in order to use the Proprietary ERP software, Free and Open source ERP software is designed to freely used, copied and modified for anyone without buying the software licenses. (Erepinsights 2009, 18.03.2009)

Even though Free Open source ERP software is free to use, it is not favorable and recommend ERP solution to use in practice. Many foreseen disadvantages are concerned as follows: Despite the free charge of the software itself, there will be some other following up cost to implement the ERP system, such as, scale up and down

cost, technical support services cost, training services cost and maintenance services cost. The sum of the extra cost is difficult to estimate and calculate for the company; which in worse case; the total cost could exceed the cost to buy the commercial ERP products. Further on, the vendor has no responsibility with the open source software so that there will be no guarantee for the stability, functionality and security of the free program. (Erepinsights 2009, 18.03.2009)

Normally, companies choose proprietary ERP software packages for running their ERP system. Except the disadvantage of huge investment on the program, all other aspects are advantages. Using proprietary ERP software packages is the best choice for companies to run an ERP system successfully. Figure 3 presents that comparisons between Commercial ERP softwares and Free open source ERP softwares. Obviously, Commercial ERP software has higher standard features and foundations, which actuarially are the most important aspects for company to start an ERP system.

Most of the commercial ERP solution software has reached the standardizations in the ERP market. These products are also customized to meet the clients' needs; the categories are sorted by the size of the client companies, business types of the client companies and the industry area of the client companies. Since there are hundreds of ERP vendors launched their standardized ERP solution in the market, the purchase decision of ERP software package could be difficult. The ideal ERP software packages should have:

- Lowest cost on program installing and following up supporting services
- Shortest implantation time which include testing and training
- Capability to fulfill the functions of flexibility, scalability and interoperability

There is no doubt the lowest investment and shortest implantation time can be more benefit for the company. But the functions of scalability, flexibility and interoperability are also very important when considering buying an ERP solution.

Flexibility in ERP software, which is more about customizability, is a very critical function for ERP software to have. Because when moving a business process to a software database, the software environment should be flexible to change. For instance, customized interface of the program will be good for the company to continue the current business process into new database without much change.

Scalability is the functions that indicated its ability to either scale up or down in the system when the working amounts grow or enlarged (Search 2009a, 15.03.09). For instance, when company needs to hire more employees to handle the increased amount of work, they have to be able to scale up the ERP system accordingly and vice versa.

Interoperability is the capability to unify the data from different programs into the same file formats in the same protocols (Search 2009b, 15.03.09). For instance, if the company has many different programs in diffident business departments, it is very important that the new ERP software has the function to collect the data from the old system.

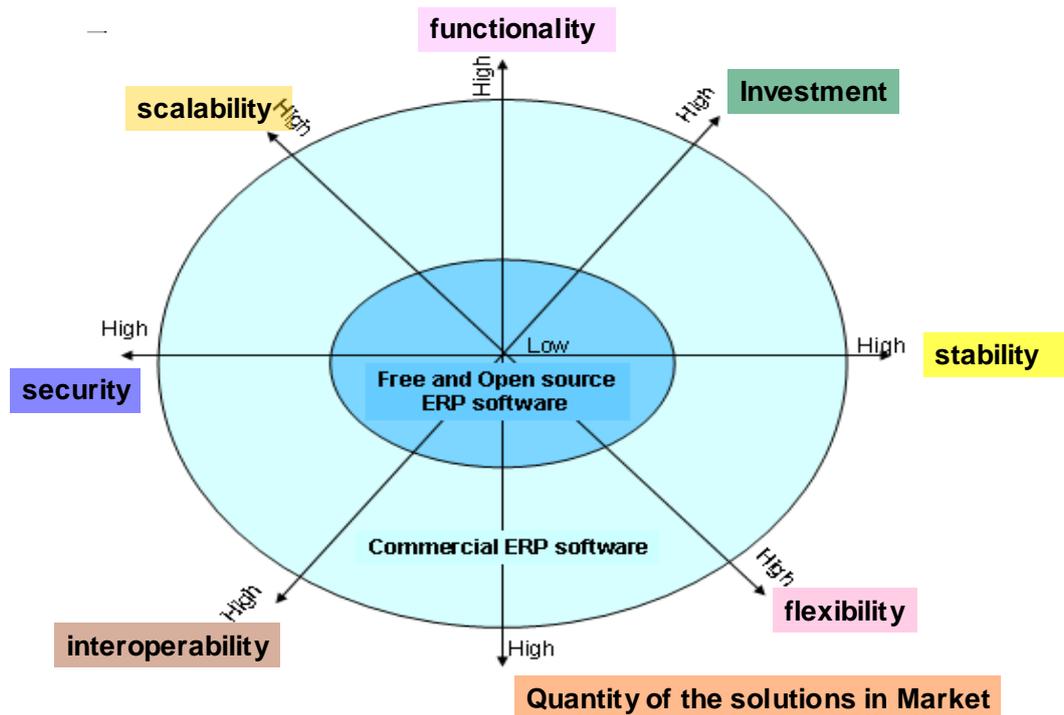


Figure 3 Comparisons between Commercial ERP software and Free Open source ERP software solutions

2.1.6 ERP vendors in the Market

Comparing with the amount of Commercial ERP software, there are much less Open Source ERP software packages available in the market, with a maximum amount about 20 selections, which are from ERP vendors Adempiere, Apache OFBiz, Blue, Erp, Dolibarr, EdgeERP, and WebERP and so on (SRT 2009, 15.03.09).

Figure 4 presents the most popular ERP vendors in the world in 2006 (ERP vendors 2006, 20.03.09). SAP, Oracle Applications, Infor Global Solutions, The Sage Group, Microsoft Dynamic were the top five ERP vendors when the comparison was based on their ERP market share. SAP was on the top position of the list. Most of these key ERP players offer large collection of ERP software packages that suits all sizes companies and different industry types of business. So when any companies search ERP solution software, in most cases, they start with these ERP vendors.

Popularity	ERP Vendor
1	SAP
2	Oracle Applications
3	Infor Global Solutions
4	The Sage Group
5	Microsoft Dynamic
6	Unit 4 Agresso
7	Lawson Software
8	Epicor
9	Visma
10	Industrial and Financial Systems
11	QAD
12	NetSuite
13	ABAS Software
14	Ramco Systems
15	SIV.AG

Figure 4 Most popular ERP vendors in the world in 2006(ERP vendors 2006)

2.2 SAP

2.2.1 Introduction of SAP

SAP stands for System, Application, and Products in Data process. SAP ranked as the number one largest independent ERP software provider in the world. Currently, SAP support all sizes of companies and provides business solutions for more than 25 major industries, with approximately 75,000 customers in over 120 countries (SAP 2009a, 20.03.09). Figure 5 shows that the top ERP vendors and their market share in year 2007 (Account...2007, 20.03.09). From the list we may see that SAP has taken almost half of ERP market share in the worldwide and positioned at number one place in year 2007.

The idea of SAP application was born in 1972, in Waldorf, Germany. The original purpose of SAP application was to provide a complete software solution that would incorporate various business activities into a single software application. With the support of SAP application, company could perform their daily business activities into an end-to-end business process, a real time executive environment. (Dennis1998, 5)

Back in late 80's, it was just right time to launch SAP product to meet the market needs of integrated business application, it was unique and invincible, therefore, the company gained a very big market share back then. With the competitive advantage, SAP also applied the marketing strategy that developed the hundreds of subsidiaries in different counties to cooperate with parent company in order to improve the better market penetration in the existing market and increase the possibility to expand its market area.

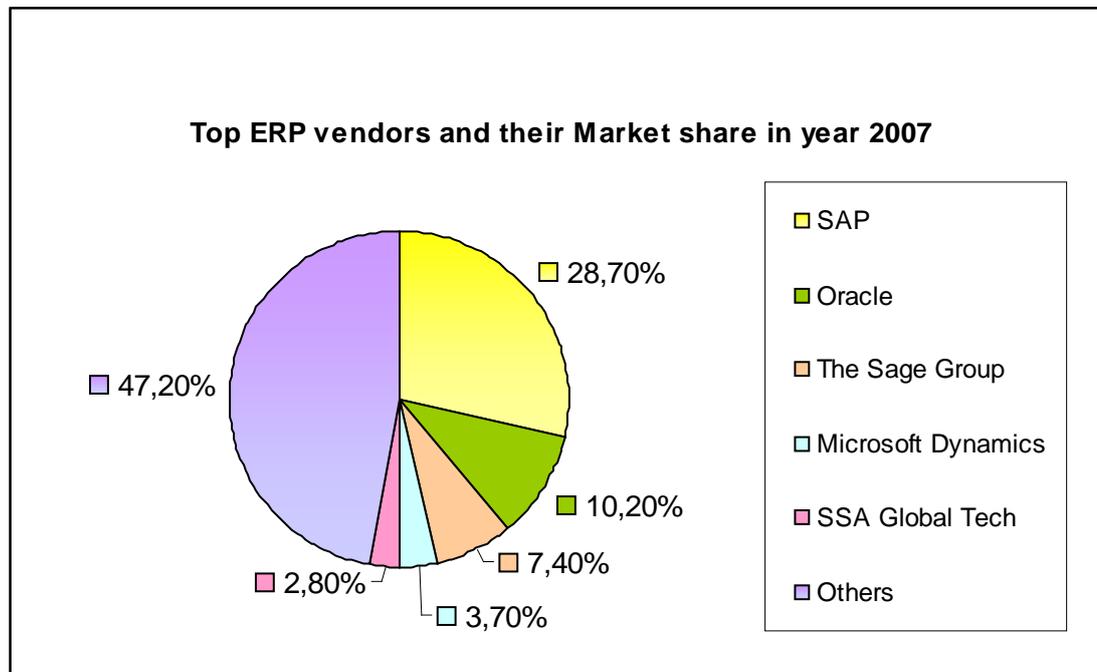


Figure 5 Top ERP vendors and their market share in year 2007(Account...2007)

2.2.2 SAP solutions

SAP has divided its solution products in to three main categories based on the sizes and business objects of the client companies; SAP for larger enterprise, SAP Business Objects and SAP for Small to midsize company.

Basically, the solutions for larger enterprises are far more expensive to invest, and need a longer time to implement. The design of the program is very complex and requires certain capacities for installing. For small and midsize companies, the solutions are affordable and quick to go live. The series of SAP Business Objects solutions are designed for more deep industrial business or more specific in certain business areas (SAP 2009a, 20.03.09). Figure 6 describes the three main categories of SAP products and their sub- categories of each product. City of Tampere bought SAP Enterprise resource planning software package which was from SAP business Suite category which was designed for large enterprises.

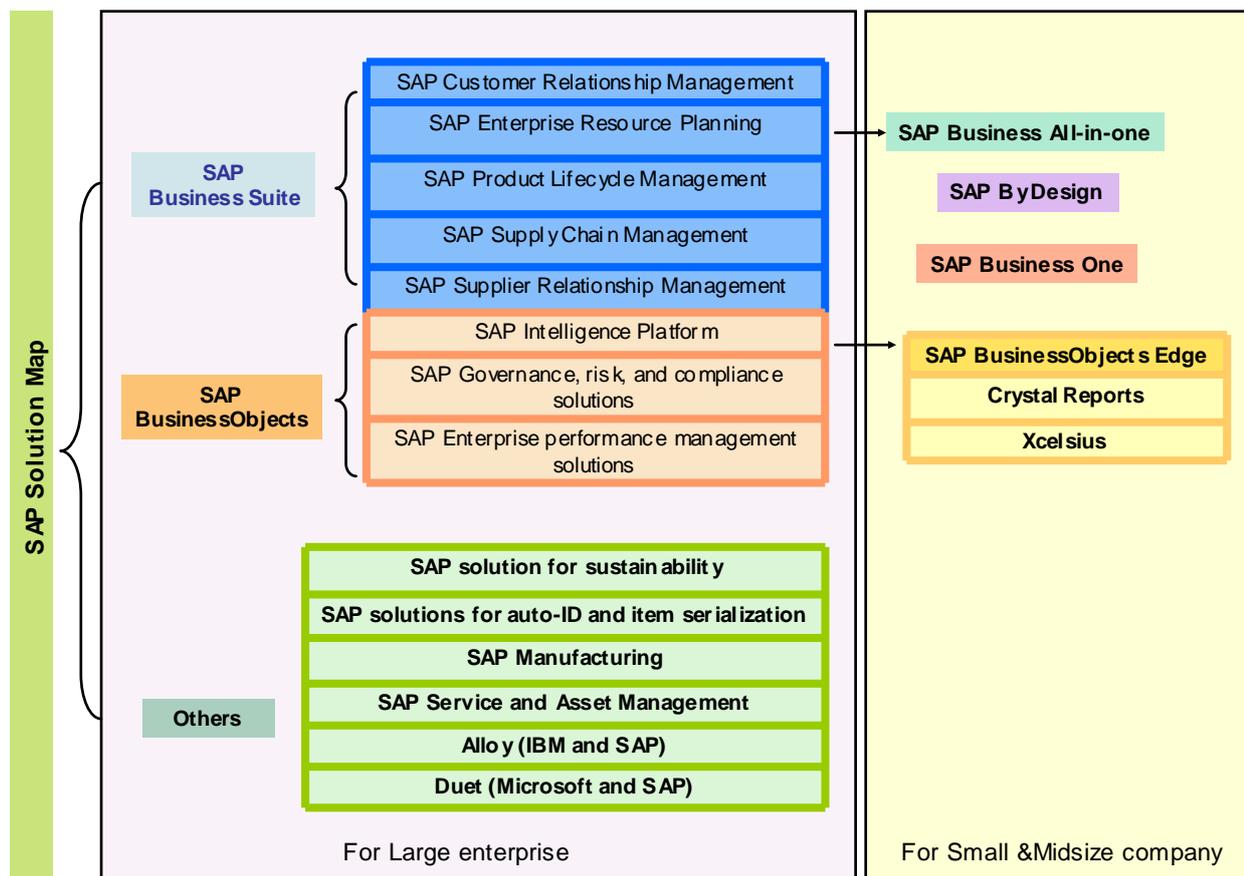


Figure 6 SAP solution map

2.2.3 SAP business Suite

SAP business suite is one of the ERP solutions from SAP Company which is designed for large scaled enterprises to execute the business processes and IT strategy at same time. Figure 7 shows the functional areas of the product, which includes critical business functions for managing the business processes, which are Customer relationship management, Enterprise resource planning, Product life cycle management, Supply chain management and Supplier relationship management. Including all these essential business processes inside one intergraded software system, SAP Business Suite also adds more value to the business processes.

Because of ability of supporting end-to-end business processes, SAP Business Suite enables the client company to gain many competitive advantages on many areas such as more efficient financial management, more effective sales management and human resources management and better logistics (SAP 2009b, 25.03.09).

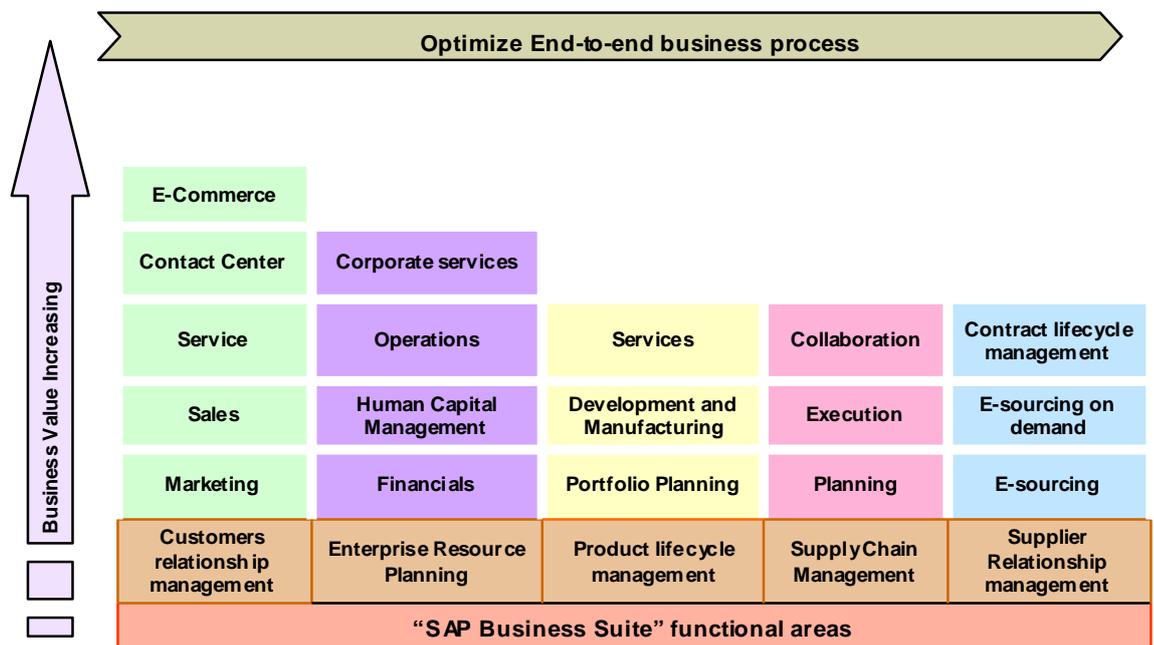


Figure 7 SAP Business Suite functional areas

2.2.4 MySAP ERP Business Suite

Once the MySAP ERP Business Suite solution is installed, to be available and useful, the new system must contain all data of the operational company. The data is so called master data such as material data, supplier data, customer data, chart of account, and others business related data (Hiquet, 1998, 55-95).

After complete the SAP solution implementation, the new system goes live and works the similar way as other business software. The most significant difference is that the data is input only once. Figure 8 explains the SAP ERP framework and data processing process. For instance, after receiving one sales order, detailed data of sales order transfers into the SAP system by Sales department. At same time, the data is received to Material management model to check out the item availability if there has enough items for this order. If there is not enough, purchase order will be made according to the sales order. When there are enough product items, the sales order will forward to Logistic execution model to outbound deliver the product to customer (Hiquet, 1998, 55-95).

After confirmed the unload delivery, company will sent the bill to the customer in order to complete the sales order. The data doesn't need to be input many times in different departments, in different standards format or even in different measurements. It is very crucial for company to use good data to run business (Hiquet, 1998, 55-95).

Usually during the business process, data transfers in to the MySAP ERP system are financial data, material management data and sales distribution data. The exported data from the system are processed data of financial data, material management data and sales distribution data, but as an addition, production planning data, which includes forecast data.

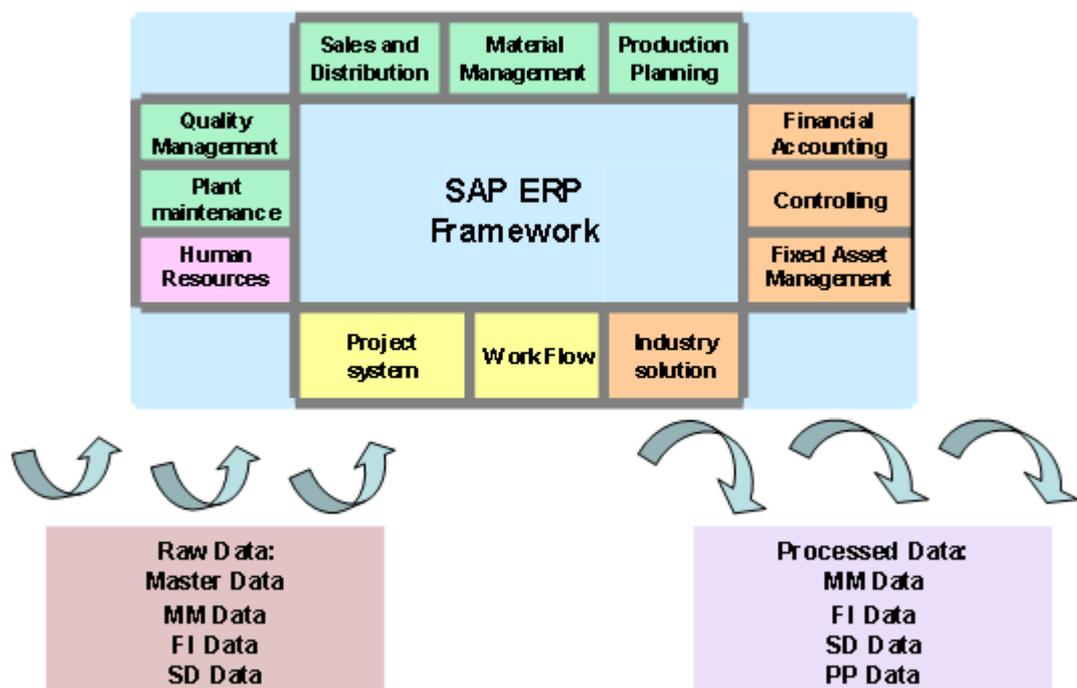


Figure 8 SAP ERP Business Suite Framework

2.3 Siemens Supply

Siemens is a global technology and service company that provides broad range of products, solutions, systems and services for many industry areas. Today Siemens is the most innovative company that provides total solutions in over 190 countries. And it has been the Finnish society constructor and local business partner for over 150 years. The main products and services from Siemens to Finland are computers, household appliances, lamps and light bulbs, and financial solutions. (Siemens 2009, 25.03.09)

Siemens is one the SAP business partner, and positioned as one of biggest SAP solution suppliers in Finland. Now Siemens have signed the contract with City of Tampere to be the supplier of MySAP Business Suite system (SAP 2009c, 05.04.09).

3. Company Introductions

3.1 About City of Tampere

Tampere is the third largest city in Finland and the largest inland centre in the Nordic countries. It was a leading industry center earlier, and now ranked as the third position of the most rapidly developing regions in Finland.

City of Tampere is a public organization which provides different kind of services such as: city planning and infrastructure services, education services, social welfare and family services etc to the citizens who live inside Tampere region and sub-region of Tampere. Figure 9 presents the organization structure of City of Tampere in year 2009. The organization is lead by City Council and its strategy management process is conducted by Central administration. (City...2009a, 27.03.09)

1.1.2009

Organisation Chart of the City of Tampere 2009

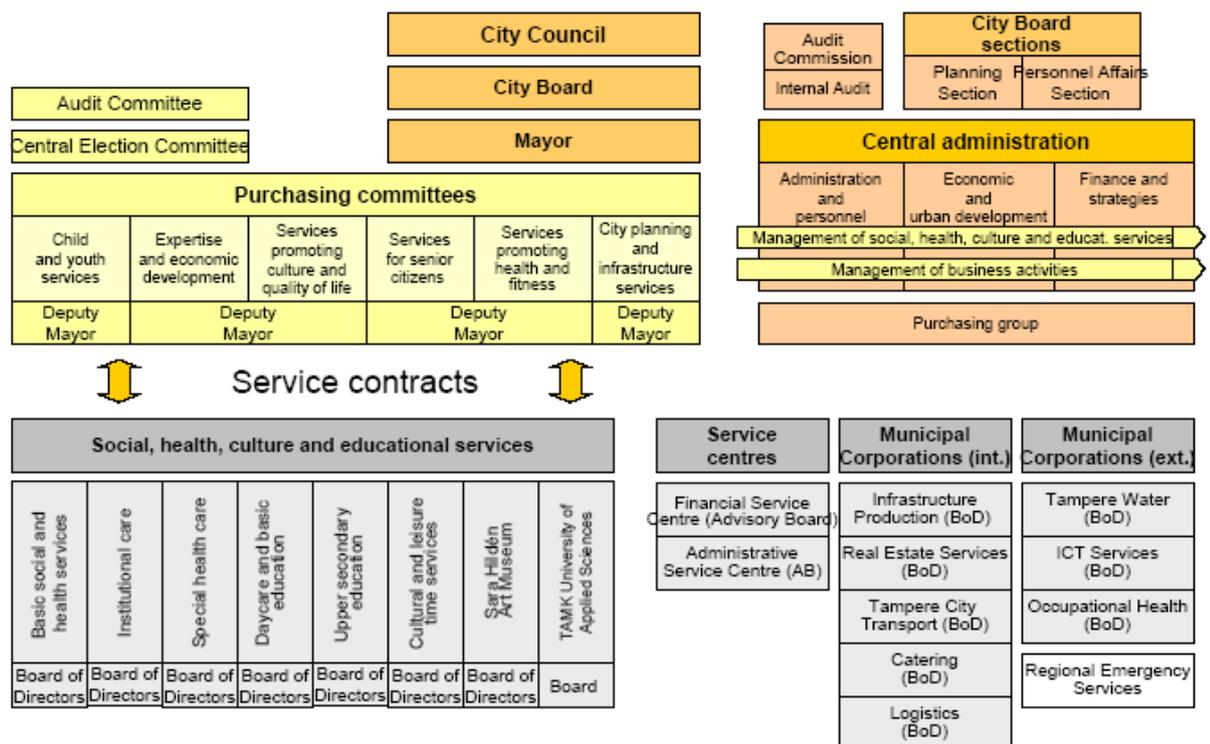


Figure 9 City of Tampere Company structure (City...2009c, 27.03.09)

3.2 Management models in City of Tampere

City of Tampere has two new management models, which are Purchaser-Provider Model and Mayorship Model as showed in Figure 10. The purpose of applying Purchaser-Provider Model in City of Tampere is for improving the efficiency of service production. In practice, the purchaser committees are responsible for specifying the services and their costs from providers, later on deciding the final provider (City...2009b, 27.03.09).

The other model, Mayorship Model, is based on the needs to strengthening the political system and enhancing the strategic leadership. The adoption of the new Mayorship Model will improve channels of citizen's participation, better political decision making and enhance the strategic leadership (City...2009b, 27.03.09).

In year 2002, City of Tampere proposed the new models to the City Council and eventually they were accepted in the beginning of the coming year 2003. At the start period of applying Mayorship Model, the central administration restructured into three drive groups: Administration and Human resource, Economy and Strategy, and Business activities and Finances. Later on, in year 2005-2006, Purchaser-Provider Model tested in three services areas, they are City planning and Infrastructure services, Daycare services, and Basic Education. The approved new models are fully applied into the entire organizing from 1st January 2007. (City...2006, 02.04.09)

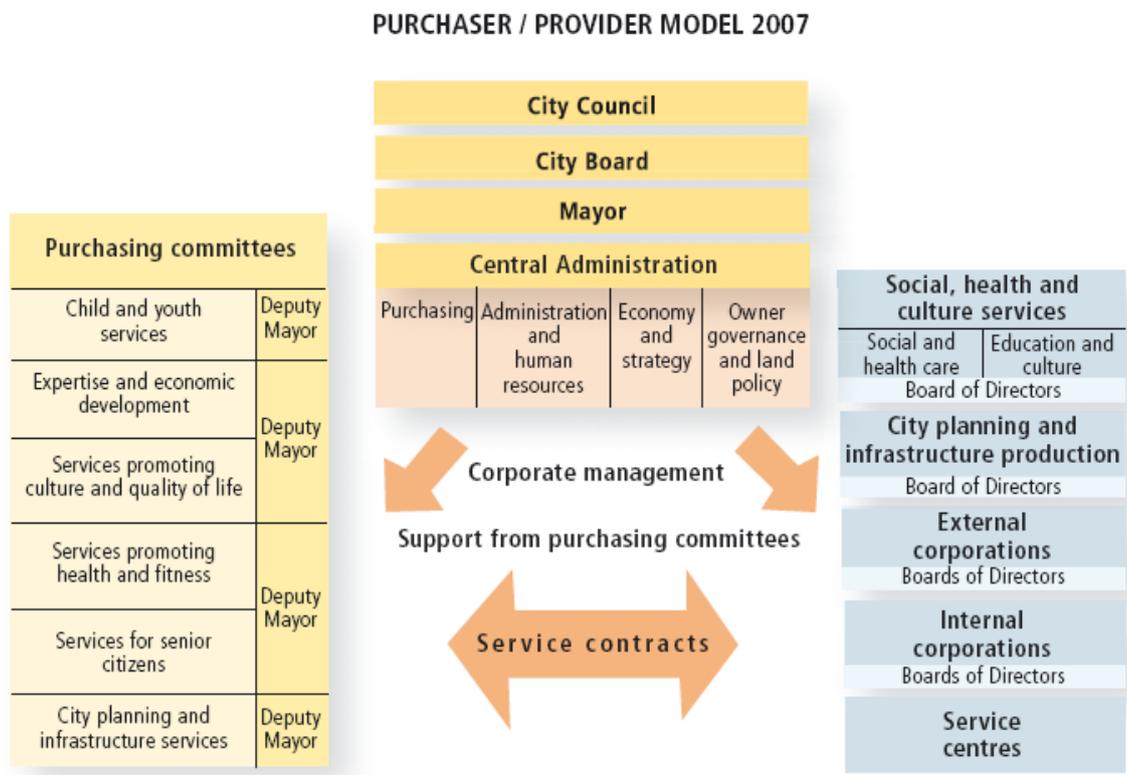


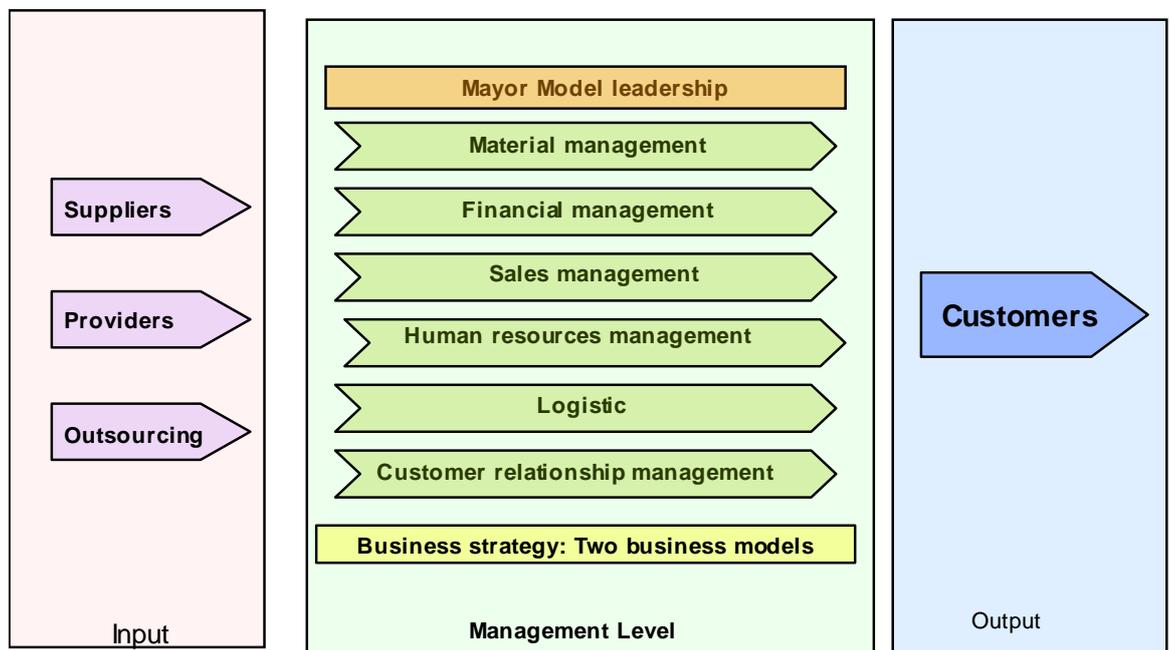
Figure 10 Purchaser and Provider model (City... 2009b, 27.03.09)

3.3 Business process of City of Tampere

In general, the definition of business process is collections of business related activities and structures that needed for providing the services and products to meet the costumers' needs. As figure 11 shows, for City of Tampere, its business process can be described as a collection of specified services from either internal providers or external suppliers to its customers. The administration area includes the Tampere central region, towns of Nokia and Ylöjärvi and municipalities of, Kangasala, Lempäälä, Pirkkala and Vesilahti. (City... 2009b, 27.03.09)

From the statistic book of Tampere City 2007 it showed that there are about 207,866 inhabitants in Tampere, and almost 300,000 inhabitants in Tampere sub-region, which comprises Tampere and its neighboring municipalities. All those inhabitants who live inside Tampere or Tampere sub-region are the current customers to Tampere city, about 250,000 - 400,000 and the customers for Tampere city right now.

The internal providers are the actual employees of the organization who are for instance, personnel of the public daycare centers, and teachers from schools or nurses from health care centers and so on. So far there are about 16 500 employees with 9 000 workstations in City of Tampere and about 17 000 suppliers are engaged of business activist with City of Tampere. (Kela 2006, 02.04.09)



Business Process description in City of Tampere

Figure 11 Business process descriptions in City of Tampere

3.4 The needs of ERP system

Certain factors from internal and external of the organization caused the undergoing changes of its operational environment:

From inside of the organization, City of Tampere had very complex and various business systems among the different business departments, and there were quite many collections of business software are used to execute the business processes.

As the addition, data edited in different standard forms and stored in separated data system. The processes of transporting and collecting data were slow and complicated. Reports were not available directly to the personnel; most of the reports were distributed from supervisors, which increased the difficulties of monitoring and cooperating developments.

Outside of the organization, City of Tampere had the challenge to meet the continuing increased services demands. For instance, the citizens are getting older, more people are getting retired, and more outsiders are moving in to the city to study or work, all these trends increase the amounts of the services in the near future.

Last but not least, Tampere needed to strengthen the political system and enhance the strategically leadership, furthermore, City of Tampere needed to provide clear management configuration in the city management.

3.5 ERP implementation in City of Tampere

The new ERP system in City of Tampere was defined as a unified business system that provides all business function for the end-to-end business process. The functional goals of applying ERP solution were characterized as centralization, harmonization, and self-service.

The new ERP system included financial management function, sales management function, logistics function, HR management function, Material management function and supplier relationship management function. It provided an IT operational platform that executes business activities as well as up-to-date analysis and report for the entire origination's management. As addition, the new ERP system also provided the connection that allows the business actives with suppliers and business partners in to the system (City... 2006, 02.04.09).

The implementing process of ERP system was very complex and time consuming, as it showed in figure 12 (City... 2009f, 04.04.09). The pre-preparing of the project took place in year 2005. The organization had to foreseen the problems such as the problems caused by changes of working environments and the obstacles of implementing the new system and prepares the solutions for problem solving. City of Tampere bought SAP solution -MySAP ERP Business Suite from Siemens Supply because of its economical price compare with other offers. Siemens Business Solutions Oy had the responsibility of the integration of the project which was decide in the beginning year of 2006. The city council has approved that the total budget for the project was about six million euros. (City... 2005, 02.04.09)

The new ERP system launched in City of Tampere in the beginning of year 2006, and the system development was extended till year 2007. At the very beginning stage of ERP system implementation, the new system needed to be customized that suits best for the organization. At this stage, the business models of the organization were selected in the system, the interface of the system designed, business transaction codes defined, most of all, basic master data of the organization transferred to the new system. (City... 2005, 02.04.09)

In year 2006, began the implementation project of the customized SAP system with general setting of the basic functions. These functions were built gradually and divided into many phases, so that the implementation process of the project would not interrupt the operational process of the business. These basic functions were includes financial accounting management, sales and distribution, material management, project management, human resources management and logistics functions. (City... 2005, 02.04.09)

Once the new system had all the basic functions in place, the old system such as the contracting system and the procurement system wee transferred in to the new system, so that and financial management systems could be processed by the new SAP application. Later on, all purchase orders could have been sent to suppliers in e-formats, which saved much time and cost in acquisition process. After the implementation of new ERP system completed, it moved on to the stage of system maintenance and development. (City... 2009e, 02.04.09)

To extend the functional usage of SAP, City of Tampere also created the connection platform in the new system with the external systems of their business suppliers and business partners. With this function, for instance, it enabled the organization to execute the internal and external billing system and procurement system more smoothly and faster than before. (City... 2009e, 02.04.09)

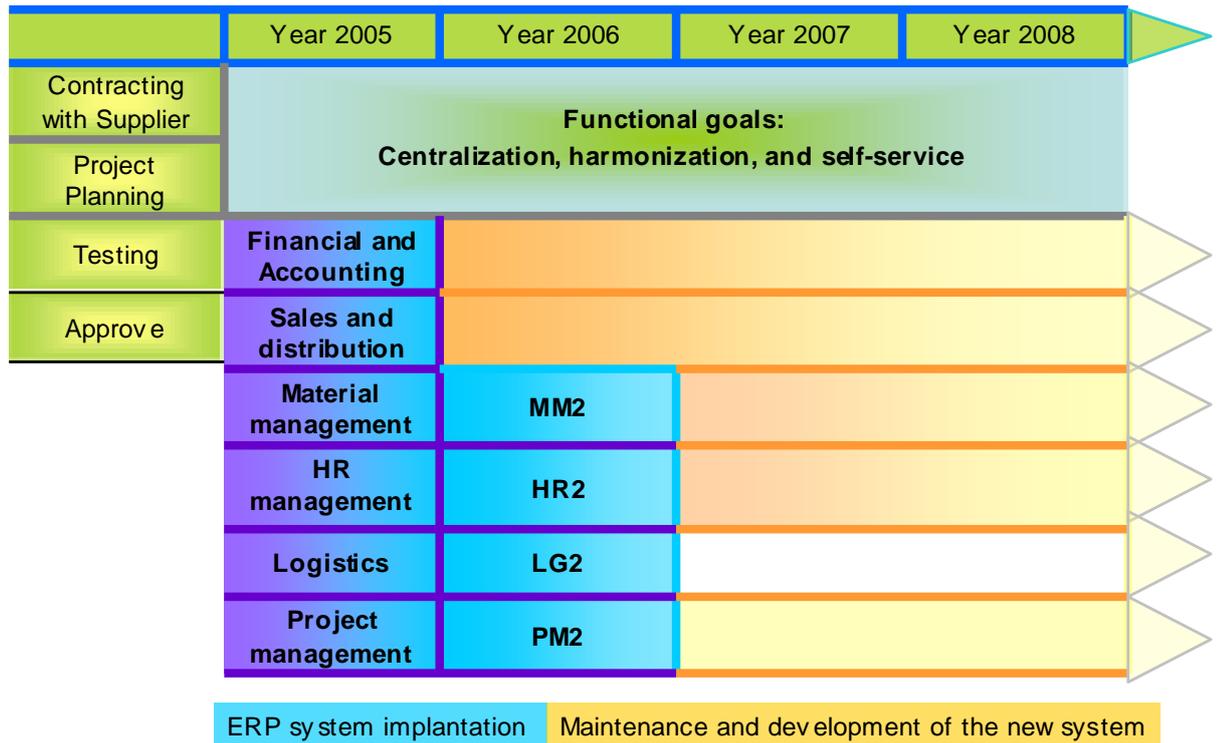


Figure 12 Timetable SAP ERP system implementation of City of Tampere
(City... 2009d, 04.04.09)

3.6 ERP system users in City of Tampere

Most of training took place between years 2005-2006; taking place about 1-2 months at each period. During the training periods, the process divided into several parts which were: final accounting; sales; purchase and material management; HR management; information and knowledge management; and project management. The table 1 presents SAP user quantities by each process and the training period. In order to meet the goal, the organization needed to provide more training to SAP users in the future development process (Interview, 19.11.08).

Table 1 SAP user quantities by each process and the training period

process	Current User quantities	Training (1-2 months each period)	
		Goal of User quantities	Actual Training users and date
Financial accounting	Recording users: 630 (Personnel volume 400) Browse users: 910 (Personnel volume 700)	Recording users: 200 System users: 200	Training 400 personnel in 2005 autumn.
Sales	Recording users: 210, Which 190 in general billing system (Personal volume 200) No browse users	Recording users: 210 No browse users	Training in 2005 autumn.
Purchase and material management	Experts: 170 Self-service buyers: 210 Supply authorizing: 1000	Experts and Product managers: 60 Self-service buyers: 900	Training 60 + 150 Self-service buyers in 2005 autumn. 750 Self-service buyers in year 2006.
HR management	Recording users: Travel 110 and Fortime 300	personnel: 230, which 80 salary calculator 40 Service calculator	Training 230 personnel in year 2005. 1000 superior in year 2006.
Information and knowledge management	Recording users: 10	System users: 600-800	
Project management	Recording users: 700, which 500 in RAKPO (Personal volume 200)	System users: 600	Training happening in 2005 autumn

3.6.1 User or key user

In the City of Tampere, the current ERP system users and future users are identified at coarse level. Currently, there are 2000 personnel from the organization working with SAP ERP system involved. But divided by the functional roles in SAP information system, one person could have one or more user accounts in the system. So far the total amount of SAP users is estimated at approximately 2800; mostly they are the self-service and report users of material management. Key users are the SAP user of the system on diary basis; controllers and managers are the upper level users of the system that have all the administrative rights and responsibilities of the system (Interview, 19.11.08).

3.6.2 Controller or administrator

In practice, they have the responsibilities to make sure the program is installed properly and is compatible with the other existing ERP systems. During the implementation of the ERP system in the organization, they took care of the functional setting process during implementing the SAP project, which are known as SAP MM (Materials Management) and SD (Sales and distribution) modules; Master Data and related functions; Systems interfaces and integration between SAP modules and business systems; Logistics and HR Information System / Reporting etc. (Interview, 19.11.08).

In addition, they prepared the training courses for the key users to teach them how to use the SAP program to make sure everyone knows how to get started with this new system independently. The courses were designed for different groups, the maintenance training documentation and materials were prepared according to their objectives (Interview, 19.11.08).

Most of the work was done by project work, which of course required them good team working skills and good sense of coordination of activities with other business areas. They had to look over projects to make sure the projects were completed properly and meet the organization's goals. The evaluation of new system was very critical for them, so that they knew if the program needed to be expanded or upgraded. If the new program needed to be expended or upgraded, they would modify the proposed the software by current supplier or maybe from other suppliers to meet the needs for the organization. Currently, they are planning to upgrade the SAP program with another supplier (Interview, 19.11.08).

3.6.3 Manager

ERP managers are the enterprise resource planning (ERP) analysts who provide the project management supervision and functional expertise. They had very important function role during the implementation of the SAP ERP system. As the author mentioned in ERP implementation part, the process of implementing the ERP system is very completed which request and cause many changes in the working environment of the entire organization. In order to minimize the risk of the project, SAP managers need to take many aspects in consideration during the preparation of the project (Interview, 19.11.08).

4. Conducting the survey

4.1 conducting the survey in the organization

After received the research permission authorized by City of Tampere, the survey was allowed to take place in year 2009. Meanwhile, the organization gave great support for this study that introduced one personnel to assist author to transfer the questionnaires into Lomake system. In Finland, Lomake (an e-survey system) is very well known and most used tool to publish the questionnaires online. Sample of this survey was set in the City of Tampere and questionnaires were published in the Lomake in the beginning of April of 2009.

Because of the target group of respondents are native Finnish speakers, the questionnaires should be available both in Finnish and in English. There were 16 questions for each questionnaire, all the questions were asked the same and edited in the similar format. The estimation of the completing the questionnaire would be approximately 5-10 minutes. Both of two questionnaires were published at same time and the questionnaires were available for two weeks online. Publish period started from 30.03.09 until 13.04.09, and no responses would be processed that exceeded the deadline.

For the privacy and security purpose, the questionnaires were absolutely anonymous and once the survey finished and data was analyzed, all received information was deleted. There were 98 questionnaires sent to the target sample in the organization. As a result, 28 responses as total amount received, 3 responses were testing samples and 1 response was exceeding the deadline of the survey, the rest 24 responses were considered as valid responses and later on used for analyses process.

4.2 Analysis Tool

SPSS stands for Statistical Package for the Social Sciences, it is a statistic software product used in the research study and problem solving. The special features of this analysis tool are easy to use and quick to report the result (Eric 2005, 1-5). SPSS 16.0 is an advanced product from SPSS Company. This statistic analysis tool can make statistical analysis more accessible for beginner and more comprehensive for advanced user. It supports many functions such as reports, charts and trends, descriptive statistics and even complex statistical analysis. (Marija J. 2008, 1-20)

In this case study, the estimation of the amount of responses was 35, but actually, only 24 responds received after the survey period ended. Even though the big quantities of responses will be more accurate to analysis by quantities analysis tool, SPSS 16.0 is very good choice indeed.

5. Analysis of survey

5.1 Identify respondents from the target groups

The purpose of setting three different target groups for the same questionnaire was trying to find out the general opinions of respondents about current ERP system and SAP usage in City of Tampere. Meanwhile, studying their opinions from different target groups' point of view in order to check out if there were any kind of big gaps among their evaluations and opinions. The target groups of the survey were divided into three groups, which were: User or key user, Controller or administrator, and Manager. The setting of division was based on their functional roles of SAP using in their works.

From the chart 1, almost half (45.83%) of the responses were key users, one third of the responses were controllers or administrators, (37.50%) and one fifth responses were managers (16.67%). The target groups of the survey had the very similar proportion division based on their functional role of each SAP user in City of Tampere. This was a good sign that showed the survey has reached the respondents from all target groups.

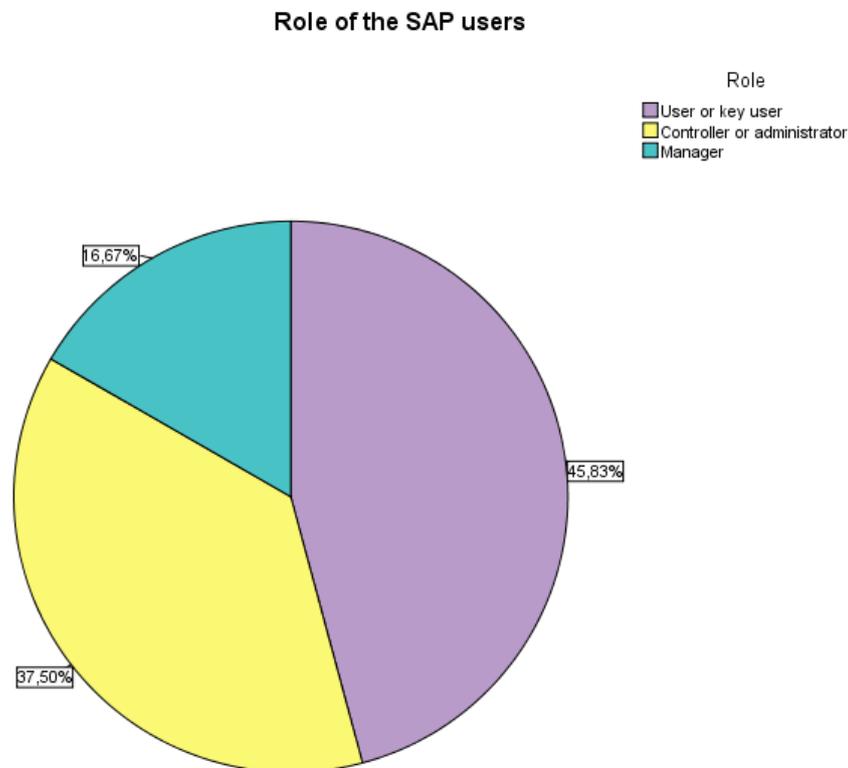


Chart 1 Role of the SAP users

5.2 Involvement in the implementation process of SAP project

Question 1: Were you involved in the implementation process of SAP in City of Tampere?

- I was in my position before implementation began
- I was hired during the implementation
- I was hired after SAP implemented

When the operational system was changing, and replacing by a new system, it could eventually cause some changes of works and personnel inside the entire organization. It would be very interesting to find out what kind of positions the respondents had during the SAP project implementing process. In addition, this question was very important to know if the respondent has participated in the SAP implementation process in order to make sure the accuracy of the following two questions.

The chart 2 showed that 70.83 % of the respondents were in their positions before the SAP implementation in City of Tampere, 4.17% of the respondents were hired during the implementation process, and 25.00% of the respondents were hired after the implementing SAP project. The result showed that at least one fourth of the respondents are the new employees in the City of Tampere after the SAP project completes. Meanwhile, for the next questions, the big percentage of their participations in SAP implementation process was very good sign to this survey, because more experienced in the SAP ERP project process respondents would definitely bringing more valuable opinions and suggestions related.

To be more specific, there were no new employees were hired or work changes during the SAP project either from controller group or manger group. But very obviously there is big change in management level; half of the respondents from manager group were hired after the implantation of the SAP system in the City of Tampere.

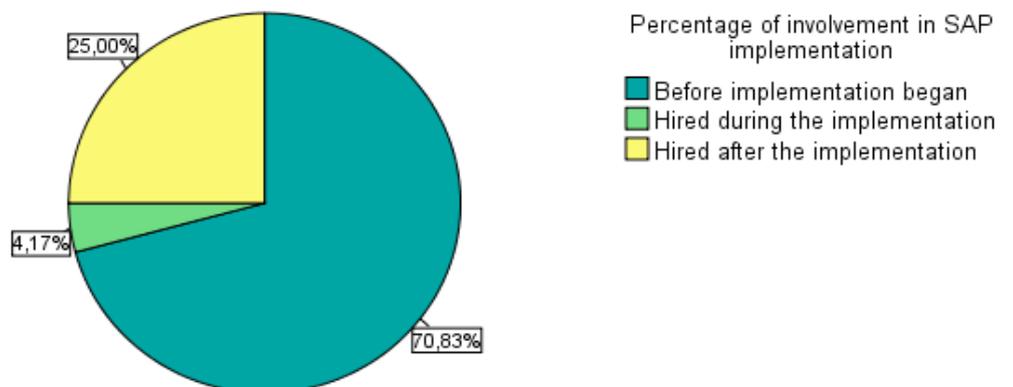


Chart 2 Involvement in SAP implementation

5.3 Difficulty of the SAP project implementation

Question 2: Did you feel the implementation process was hard?

- Yes
- No

The purpose of this question was to find out the general opinion of SAP users toward the SAP project implementation process. The question was only answered by the SAP users whom had involved the project. Most likely, the SAP user whom participated in the project implementation has confirmed that it was difficult task to complete the SAP project. 94.44% responses said that it was very hard project to implement, and 5.56% of responses present that wasn't difficult.

Further on, the result from the statistic analysis showed clearly that only 14.29% of the respondents from controllers group said it wasn't difficult project but both of key users and manager's groups felt the SAP project wasn't an easy task. The result was correct and it also illustrated the general feature of implantation an ERP system process to any organization that ERP implantation was not easy task to complete. Especially since City of Tampere had very complicated organizational structure and extraordinary wide business scope, so that it could be even more difficult task to do.

5.4 Support during the SAP implementation process

Question 3: Did you receive enough support and information during the SAP implementation both from the supplier and your own organization?

- If YES, select three main area concerned
 - Project planning support
 - System design support
 - Project management support
 - Technical implementation support
 - Process redesign support
 - Training support
 - Ongoing support
 - Upgrades support
 - Other_____
 - I don't know
- If NO, select the three main reasons concerned
 - Project planning support
 - System design support
 - Project management support
 - Technical implementation support
 - Process redesign support
 - Training support
 - Ongoing support
 - Upgrades support
 - Other_____
 - I don't know

The question was aiming to find out the level of the supports during implementing the SAP system whether the respondent received enough support needed during the implementation process of SAP project. If there were not enough support, found out from which areas of support the respondent might need and what kind of the obstacles caused the difficulties. The result showed about half of the responses claimed that they haven't received enough support that they needed during the SAP implementation process.

More in detailed result showed that respondents from management level needed more support during the SAP project implementation. From this result it was easy to make a conclusion that there was a big amount of support needed from different levels of SAP users during the SAP system implantation. Usually organizations use their ERP vendors or its consulting companies to implement the new ERP system. It is very important that the organization receive enough support for troubleshooting and assistance with ERP issues.

Mostly likely, project management level needed a lot of support at least from SAP supplier Siemens, which as the SAP supplier they had the responsibility to provide all these different levels of support related with most of areas in the list. 7 respondents didn't receive enough training support, which means there was a need for having more training support for all users.

5.5 Improvement in current SAP system

Question 4: Do you see any improved area currently in SAP, either in software itself or functions related to it?

- If YES, please list three main topics
 - 1 _____
 - 2 _____
 - 3 _____
- NO

The question was trying to find out from the sample that if respondents noticed any improved areas in current SAP system, either in software itself or functions related with, and trying to identify the improved areas. It was very good result from project management level point of view; because there were more positive opinions about current improvement in SAP system. On the other hand, the 35.29% responded that didn't see any improvements. But it was very understandable, SAP project was completed not long time ago in City of Tampere, and the new system was complicated and concerned many business areas, it would be impossible to have significant changes in a short period.

To be more specific, chart 3 showed the 11.76% of controllers and 23.53% of key users from the respondents groups didn't notice improvement in current SAP system. On the other hand, 11.76% of managers, 23.53% of controllers and 29.41% of key users from the respondent groups confirmed that there were some improvements in current SAP system. The respondents who said yes also gave specific answers to the questions, in general, the improved areas included invoice processing improvements; reporting opportunities expanded; a slight improvement in user interface; accessibility of the system is improved, and mistakes was corrected.

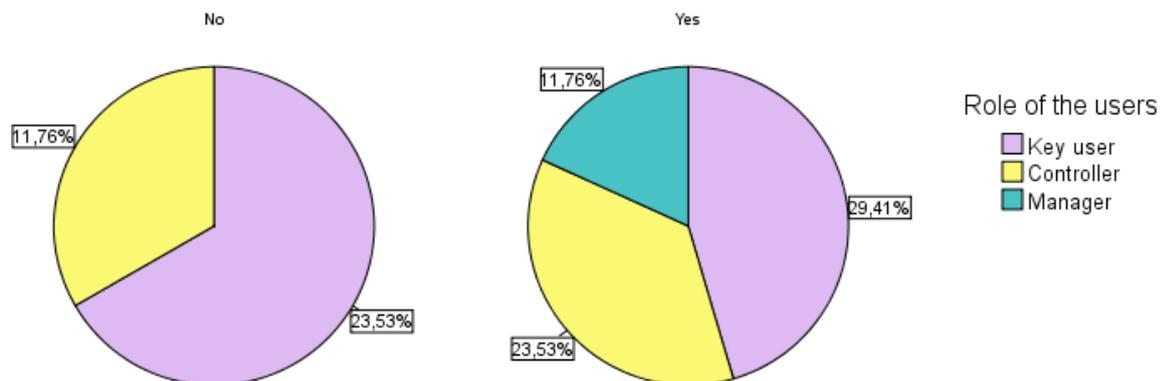


Chart 3 Improvements in current SAP system

5.6 Missing functions in current SAP system

Question 5: What are the missing functions in your current SAP system?

- If YES, please list three main topics
 - 1 _____
 - 2 _____
 - 3 _____
- NO

The question was aiming to find out if there were missing functions in current SAP system, and in which areas existed these missing functions from respondent's point of view. As the result showed in the chart 4, more than half of the respondents claimed that there were still some missing functions in the new SAP system. Especially, the key user group has 79.41% responses that there are still missing functions. The result told that there definitely needed some changes and improvements in the new system in order to optimal use of it.

More in detailed analysis of the opinions from different levels users' point of views, half of the respondents from management level and more than half respondents from key user level agreed that there were missing functions in current SAP system. In general, the missing functions were concerned in many areas, which include graphical reporting; economic statistics reports; automatic memos; cost Tracking; free styled reporting tool and several other aspects such as occasional occurred errors in analytical reporting; partner code mandatory; credit loss function was not suit for City of Tampere; the SAP system needed to speedup.

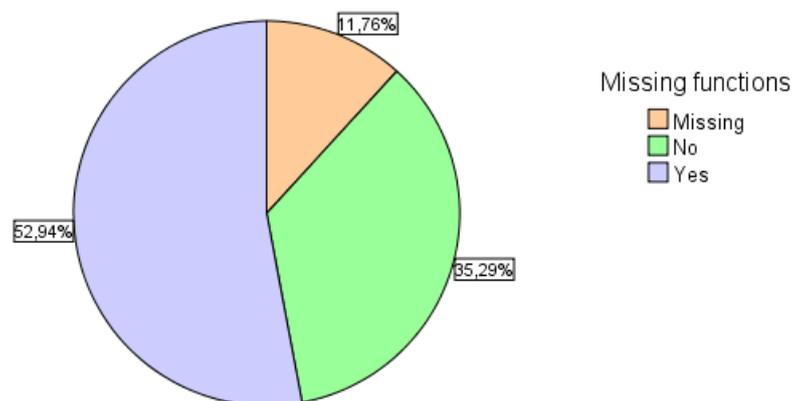


Chart 4 Missing functions in current SAP system

5.7 Frequency of SAP usage in the new ERP system

Question 6: On average, how often do you use SAP related with your work:

- Once a month
- Once a week
- 2-5 hours a week
- 2-5 hours a day
- all the time
- Other_____

The aim of the question was trying to find out the frequency of SAP usage from different users groups of new SAP system in City of Tampere. The ranges of the frequency sets were divided into five values base on the time that responses use SAP system in the work.

Chart 5 showed the SAP usage frequencies in general. More respondents used SAP in their works quite often, 2-5 hours a day, or even all the time. To be more specific, the statistic result also showed the detailed information of SAP usage frequencies base on different users groups. Most of the key user respondents and half of the controller respondents used SAP quite frequently, and compared with that, manager level respondents used SAP less frequently. Considered of this result, it would be very important that during the future development of the SAP system, the system should be improved on the areas or functions more focused on key user side.

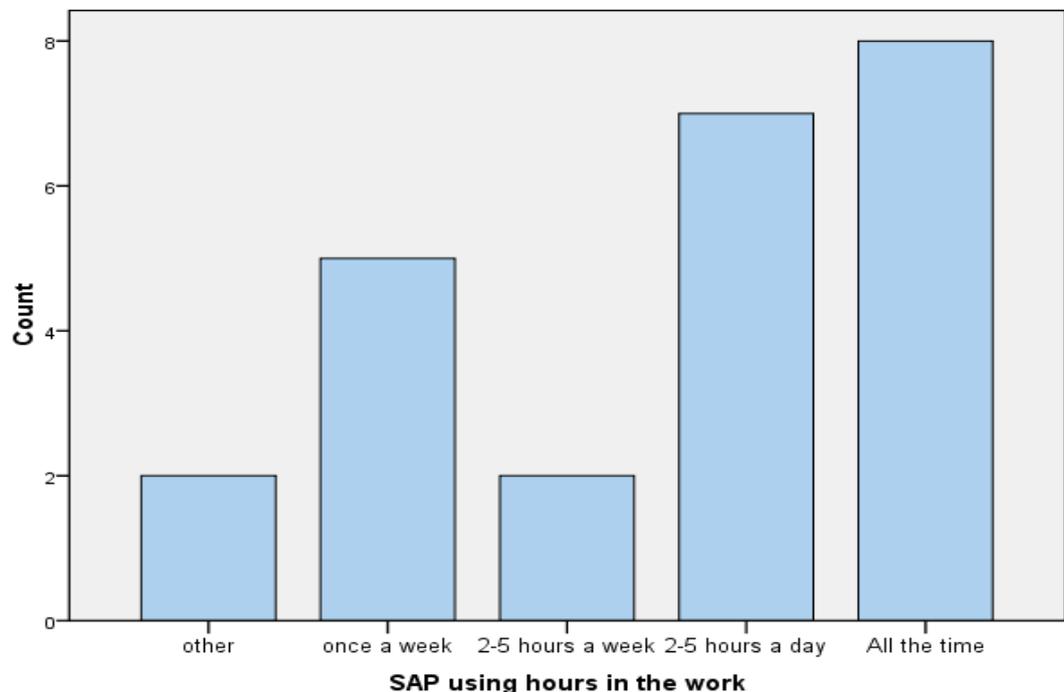


Chart 5 SAP using hours in the work

5.8 Values produced by new SAP system

Question 7: Do you feel has SAP been useful or helpful for your work

- More efficient
- More complex
- No change

The changing of the working environment should not be harmful to the business result, but it definitely causes inconvenience to the business operational process. Personnel working in a new system, since there are requirements of learning some technical knowledge, could find it to be very difficult to adjust new system. The purpose of this question was trying to find out the values the produced by the new SAP system after the completion of the implementation in City of Tampere.

Chart 6 showed that above one third of the respondents from all target groups thought that the new SAP system made the work more complex to complete, one third of the respondents didn't think SAP make much impacts in their work and less then one third of the respondents from controller and key user groups believed that SAP did help them to complete the work in the more efficient way.

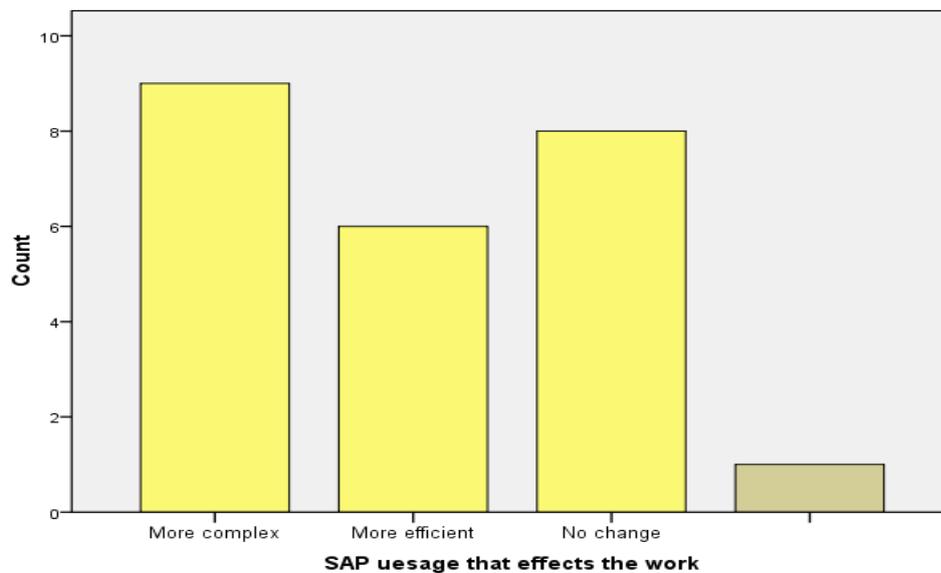


Chart 6 Values produced by new SAP system

5.9 Evaluations of SAP system usage

Question 8: Do you think users really use SAP in an optimal way?

- YES
- If NO, which you would recommend to improve, select all applied
 - Training course for better understanding of ERP system
 - Training course of navigation in SAP interface
 - Training course for customizing and personalizing SAP
 - Training course of creating/modifying reports
 - Design Training materials for different user groups
 - Create a discussion platform for all users
 - Rewards for efficiency/ active users
 - Other _____

The question was asked if SAP users use SAP in an optimal way from respondent's point of view in order to find out the current situation of SAP usage in City of Tampere. The result showed that 25% of respondents from all user groups agreed with the statement but 75% of the respondents decided that SAP users in City of Tampere didn't use SAP system in an optimal way.

The respondents who claimed that the users didn't use SAP in an optimal way also gave their opinions and recommendations to improve this issue. Table 4 showed the result that 10 Respondents recommended training courses for different user groups. It was very necessary to have the training courses special designed for different user groups. 7 respondents recommended training courses for customizing and personalizing SAP.

We could assume that these respondents are advanced users that know how to use the new system and willing to learn more about personalizing the SAP system. 6 respondents recommended training courses for creating modifying report, 5 respondents recommended training course for navigation in SAP interface, and another 5 respondents would like to have training course for better understanding of ERP system. This result shows that certain users are still need more basic knowledge of using SAP in the work.

A few of respondents recommended that City of Tampere could create a discussion platform for users. Probably the organization didn't have discussion platform system for SAP users; otherwise it could be very convenient for users to solve the problems related with the new system in a very short time. Also two respondents recommended rewards for efficiency and active users, which could increase the usage of the new SAP system

There were other comments too, some of the respondents suggested that using the system and the interface should be more user-friendly, more standard settlement of own solution for the organization.

Table 4 Evaluations of SAP system usage

		Statistics							
		Training course for better understanding ERP system	Training course for navigation in SAP interface	Training course for customizing and personalizing SAP	Training course for creating modifying report	Training course for different user group	creat a discussion platform for users	Rewards for efficiency and active users	other
N	Valid	5	5	7	6	10	2	2	3
	Missing	12	12	10	11	7	15	15	14
	Mean	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
	Median	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
	Std. Deviation	,000	,000	,000	,000	,000	,000	,000	,000
	Variance	,000	,000	,000	,000	,000	,000	,000	,000
	Minimum	1	1	1	1	1	1	1	1
	Maximum	1	1	1	1	1	1	1	1
	Sum	5	5	7	6	10	2	2	3

5.10 Opinion of purchasing SAP in City of Tampere

Question 9: Do you think SAP is the optimal choice for the City of Tampere?

- If YES, will you recommend it to others?
 - Yes
 - No

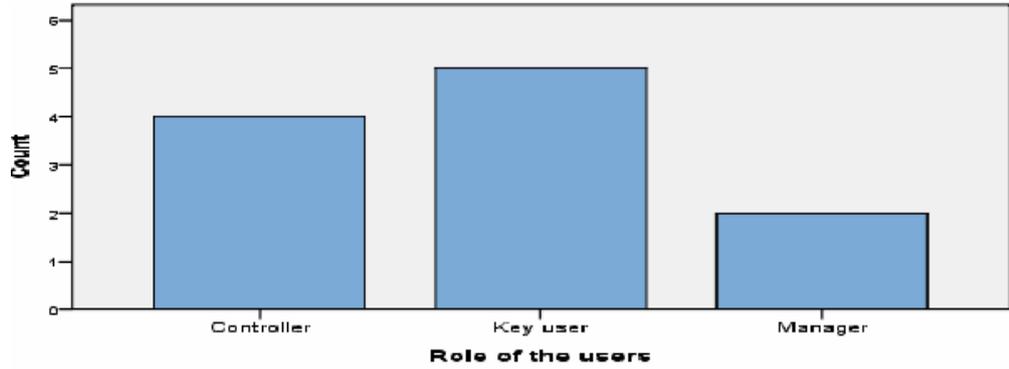
- If NO, which way SAP should be developed in the future:
 - Restructuring the system to provide better maintainability and understandability
 - Adding additional or new module from core application
 - Adding or substituting other application to core application
 - Other_____

There are many selection of ERP solution software or software packages in the world, SAP is one ERP solutions product produced by SAP Company. Many ERP suppliers have offered their ERP solutions, SAP ERP business suite was the final choice for City of Tampere. Based on that, it would be interesting to know SAP users in City of Tampere opinions on this question.

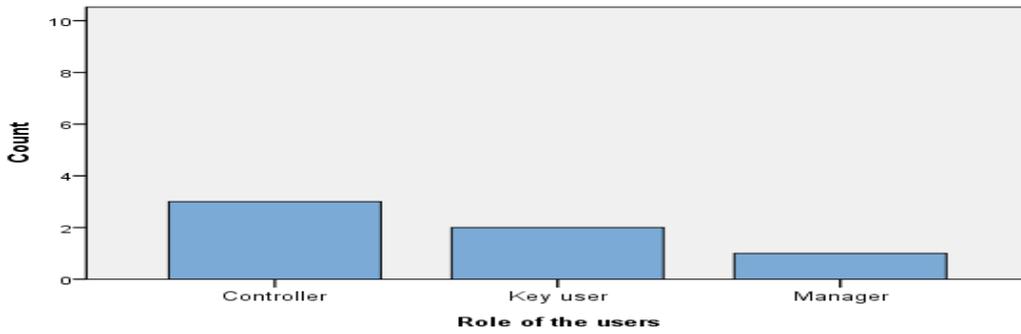
Result showed that 70% of the SAP users responded that SAP is optimal choice for City of Tampere, and compared with that, there were 30% of the SAP user respondents thought SAP wasn't the optimal choice for the organization.

The result of whether the respondents willing to recommend SAP solution to others or not after confirmed the positive opinions from the previous question. In general, all of the respondents who think SAP is optimal choice for City of Tampere are willing to recommend it to others.

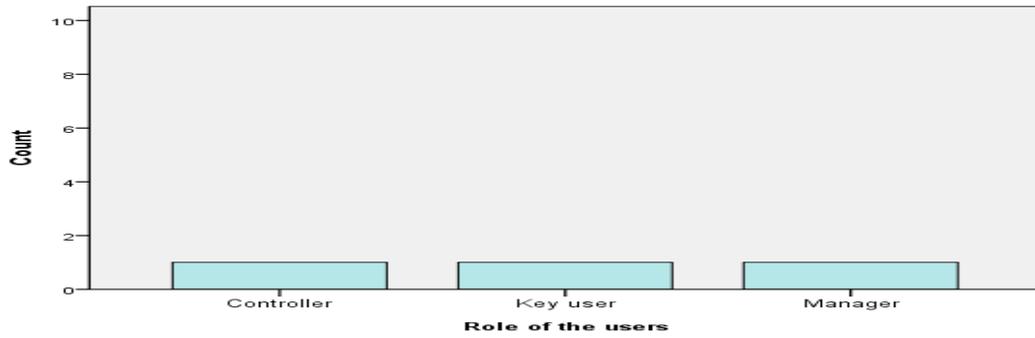
There were 30% of responses claimed that SAP wasn't the optimal choice for City of Tampere based on the result from Question 9. Meanwhile, these respondents gave their suggestions of future development of the new ERP system as showed in chart 7. These three bar charts presented each suggestion from difficult users' point of view. Comparing each suggestion, more respondents suggested restructuring the system to provide better maintainability and understandability, and very few respondents suggested adding additional or new module from or to core application



Restructuring the system to provide better maintainability and understandability



Adding additional or new module from core application



Adding or substituting other to core application

Chart 7 Suggestions for SAP development

5.11 Willingness of continue using SAP

Question 10: If you could make the decision today, would you continue using SAP?

- Yes
- If no, what are the main reasons, select all that apply:
 - Not suitable for our needs
 - Technical issues
 - Data issues
 - Quality of the software
 - Lack of understanding of the software's capabilities
 - Conflict with other systems
 - Inadequate training
 - Customizing
 - Other _____

There were 83.33% of responses showing that the respondents from all user levels were willing to continuing using SAP system. Only 16.67% of the responses were from opposite side. The results approved most of the SAP users were very realistic to this question, that they know it was impossible and unaffordable for City of Tampere to purchase another new ERP system at moment. More in detail, chart 8 showed that all respondents from manager group would like to continue use SAP system in City of Tampere, and the respondents whom would like to use continuing using SAP system were consist of 40% of key users and 40% of Controllers.

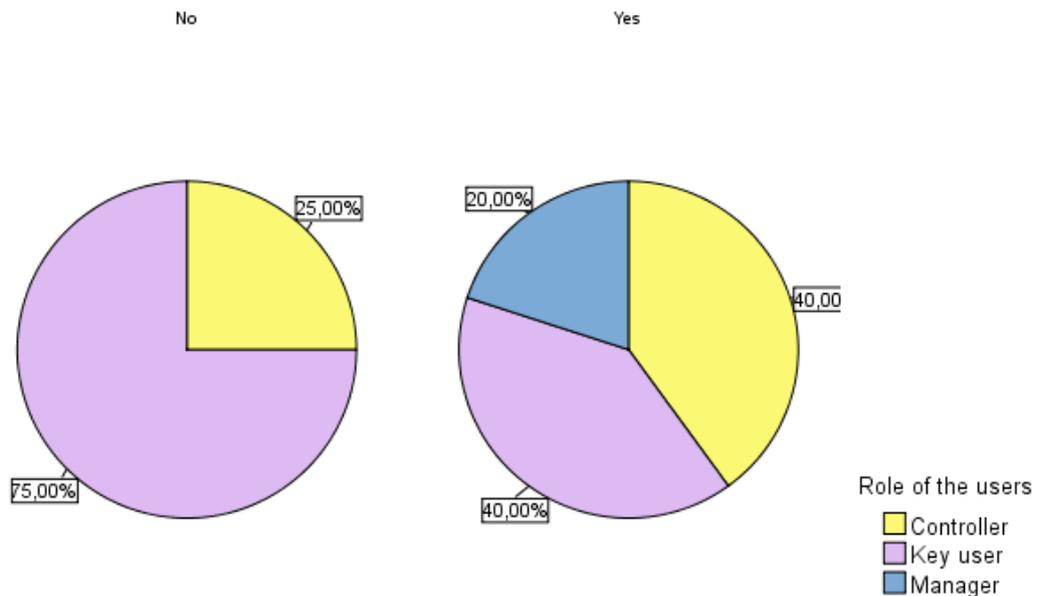


Chart 8 Willingness of continue using SAP

The rest of 16.67% of responses were mainly from Key user group and controller group. But they also gave the reasons why, these reasons were presented in the table below. Table 5 showed the main reasons; couple respondents' claimed that the SAP is not suitable for their needs. And very few respondents gave the reasons on certain aspects, such as, technical issues, lack of understanding of the software's capabilities, quality of the software, customizing. In author's opinion, most of reasons can be solved by additional training to the SAP users.

Table 5 Reasons for not willing to continuing using SAP system

		Statistics								
		Not suitable for our needs	Technical issues	Data issues	Quality of the software	Lack of understanding of the software's capabilities	conflict with other systems	Inadequate training	Customizing	other
N	Valid	2	1	0	1	1	0	1	1	0
	Missing	15	16	17	16	16	17	16	16	17
	Mean	1,00	1,00		1,00	1,00		1,00	1,00	
	Median	1,00	1,00		1,00	1,00		1,00	1,00	
	Std. Deviation	,000								
	Minimum	1	1		1	1		1	1	
	Maximum	1	1		1	1		1	1	
	Sum	2	1		1	1		1	1	

5.12 Recommendation of other ERP vendor

Question 11: From which vendor you recommend, select one only

- Oracle Applications
- Infor Global Solutions
- The Sage Group
- Microsoft Dynamics
- Unit 4 Agresso
- Lawson Software
- Epicor
- Visma
- Industrial and Financial Systems (IFS)
- QAD
- NetSuite
- ABAS Software
- Ramco Systems
- SIV.AG
- Other_____
- None

After realizing there were 16.67% of responders who had negative opinions of continuing using SAP system, it would be interesting to find out if there are any other ERP vendors they could recommend.

Only couple respondents recommended Microsoft Dynamics and rest of the respondents chosen none option or don't know. It was author's mistake to aware the fact that most of the people answering the questionnaire were not experts in ERP areas, the question shouldn't touched upon very deep knowledge area of ERP.

5.13 Suggestions for assumed ERP system implementation

Question 12: If you have to do the implementation all over again, what would you like to change, select that all apply:

- Software module selection
- Internal team structure
- Project schedule
- Project scope
- Project governance
- Project budget
- Communications
- Training process
- Technology infrastructure
- Software customizes
- Other_____

There were 7 respondents would like to change the project schedule and another 7 respondents would like to change internal team structure; 6 respondents would like to change the training process, and other respondents opinions showed in table 6. In the other word, this table also reflected the areas that SAP users were not satisfied with during the SAP project implementation process.

Table 6 Suggestions for assumed ERP system implementation

		Statistics										
		Software module selection	Internal team structure	project schedule	Project scope	Project governance	project budget	Commu nications	Training process	Technology infrastructure	Software customizes	Others
N	Valid	2	7	7	4	3	1	3	6	1	4	0
	Missing	15	10	10	13	14	16	14	11	16	13	17
	Mean	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
	Median	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	
	Std. Deviation	,000	,000	,000	,000	,000		,000	,000		,000	
	Minimum	1	1	1	1	1	1	1	1	1	1	
	Maximum	1	1	1	1	1	1	1	1	1	1	
	Sum	2	7	7	4	3	1	3	6	1	4	

5.14 Attendance of SAP training courses

Question 13: Did you attend any training course during the implementation?

- If YES, please specify what kind of training? _____
- NO

Moved to the training section of the questionnaire, this question was aiming to find out whether respondents have received any SAP training courses, and if they did, specifying these courses. The results of this question showed that two thirds of the respondents have participated in the SAP training courses. These respondents participated the courses also gave the specific description of the courses. It seemed like, City of Tampere have provided various SAP courses to SAP users by conducting the training course to small groups. Most of the courses regarded as SAP navigation, reporting in SAP, end-user training PS/PM, BW course etc. in basic level.

More in the detail chart 9 showed the comparisons of SAP courses attendances among each target group. Currently, one third of the respondents from controller group and half of the respondents from manager group were not participate any SAP courses provided by the organization yet. Most of the respondents from key user group have taken some training courses offered by the organization.

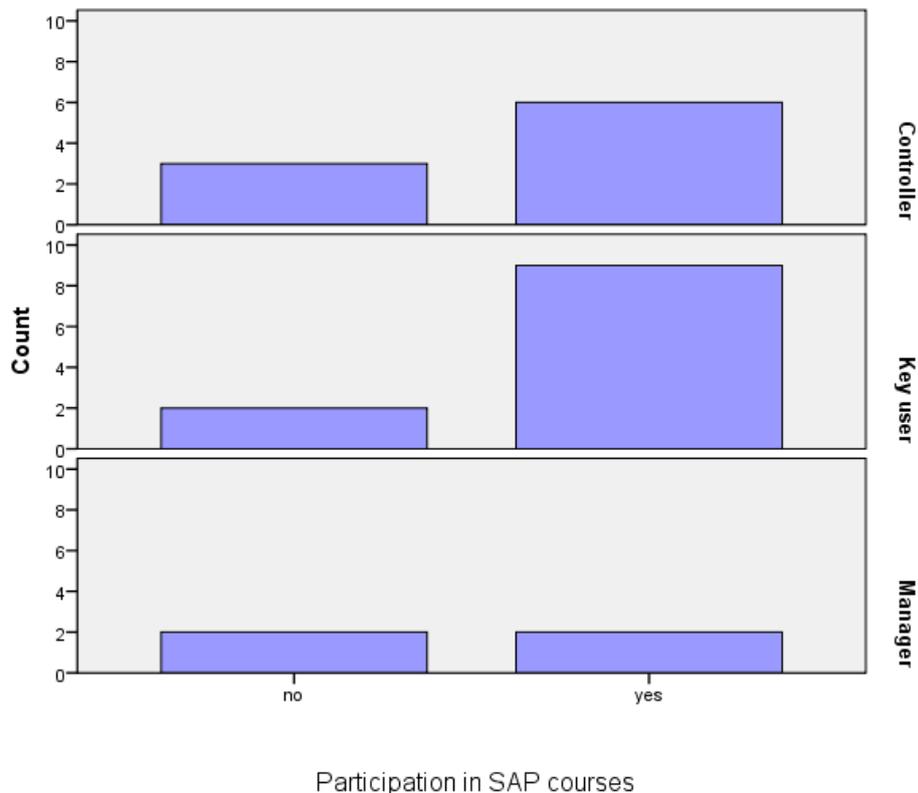
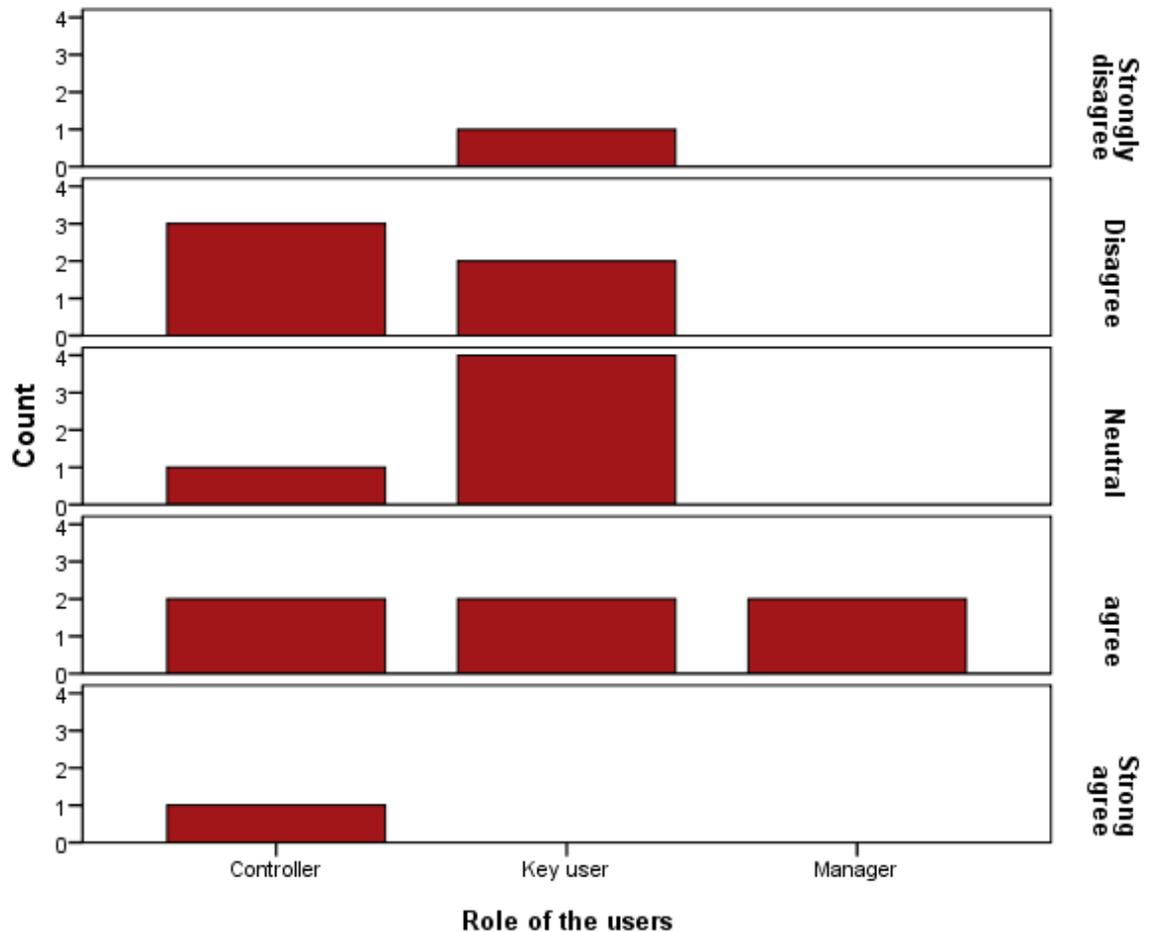


Chart 9 Participation in SAP courses by different SAP user's level

5.15 Evaluations on SAP training courses

5.15.1 Did the courses meet scope, aims and objectives

The purpose of this question was finding out the general feedback of the courses provided by the organization. The original question was asked respondents' opinions to these courses whether they met scope, aims and objectives. The respondents who have participated in SAP training courses gave the valuable opinions of those courses they had. From this chart 10 we could easily see that all of the manager respondents had positive attitude and agreed on the subject; half of the key user respondents didn't give an opinion, out of that, 2 key users agreed, 2 key users disagreed, and 1 key user strongly disagreed on the subject; at the controller level, half of the respondents disagreed and half of the respondents agreed or strongly agreed on the subject.

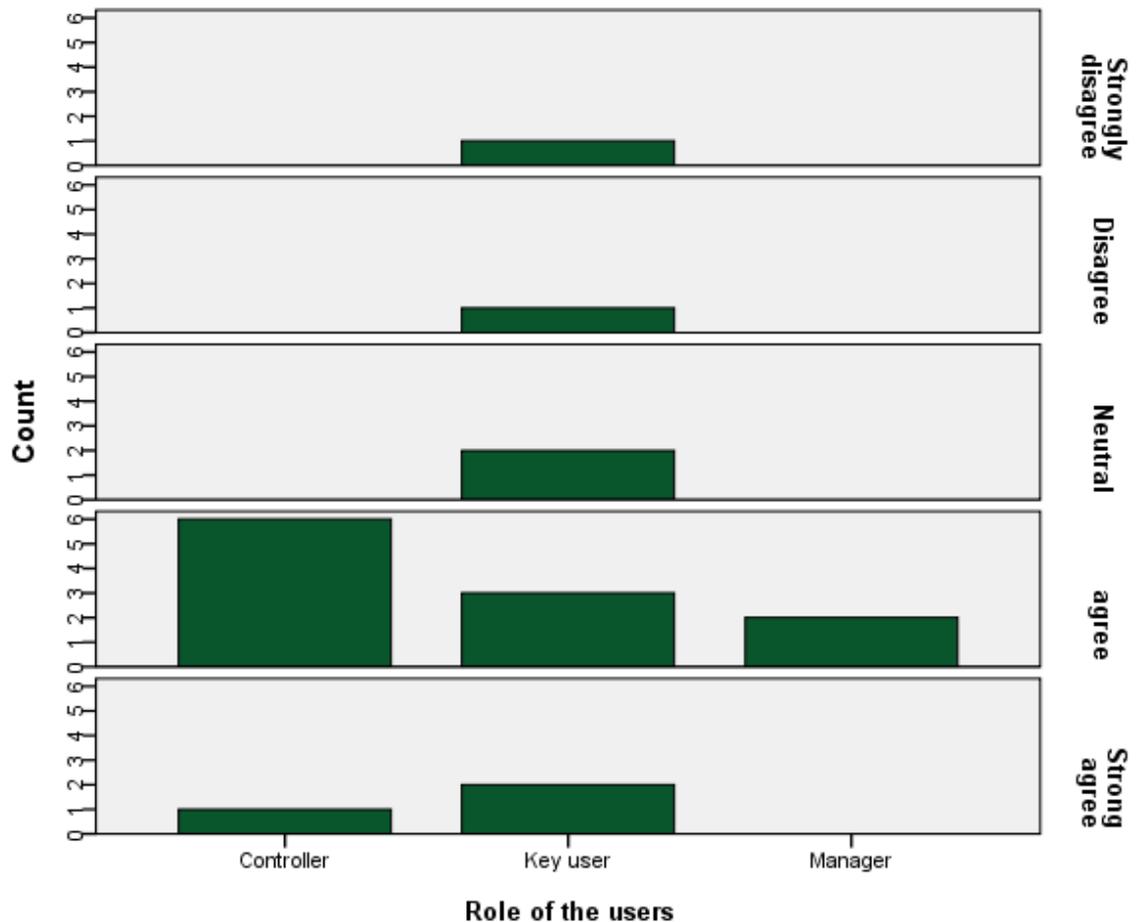


Courses met scope, aims and objectives

Chart 10 Did the courses meet scope, aims and objectives

5.15.2 Were the courses useful or helpful related with work

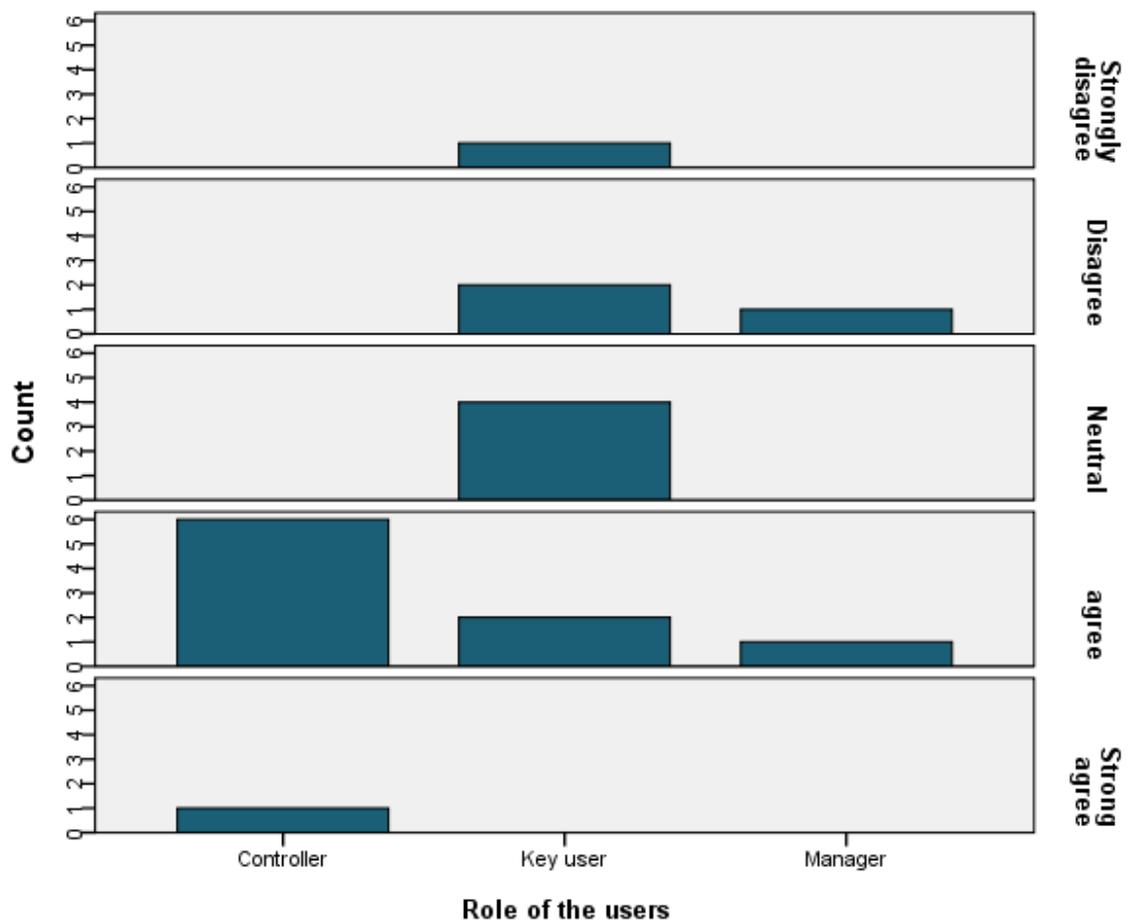
This question was aiming to find out the usefulness and helpfulness of the SAP courses. From this chart 11, we could easily see that most of the responses were from either strong agree or agree that SAP course were useful or helpful. A few respondents from Key user group didn't evaluate those SAP courses were useful or helpful to their work. General speaking, this result approved that these SAP courses provided by the organization were quite useful or helpful to all level users with their work related.



Courses were useful or helpful for my work
Chart 11 Were the courses useful or helpful related with work

5.15.3 Were the courses easy to follow

The question was aiming to find out the difficulty level of these courses from different user levels' point of view. The result showed in chart 12, from Controller group responses, all positively evaluated of this question in which most of them agreed and a few are strong agreed that provided courses were easy to follow; from manager group responses to this question, half agreed and half disagreed; from the key user group respondent's point of view, half of them didn't give any opinion on this question, a few of them agreed and rest disagreed on the subject.



Course were easy to follow

Chart 12 Courses were easy to follow

5.15.4 Were the attended courses enjoyable

The purpose of the question was to find out the evaluation of the interestingness of the courses. This result chart 13 was very similar with the question on “courses were useful or helpful to my work”. All of the respondents from manager group and controller group were enjoyed attending the SAP course. Very few respondents from Key user group didn’t really enjoyed attending the course. Author could assume that most of the respondents who though the courses were useful or helpful also evaluated these courses were enjoyable to attend.

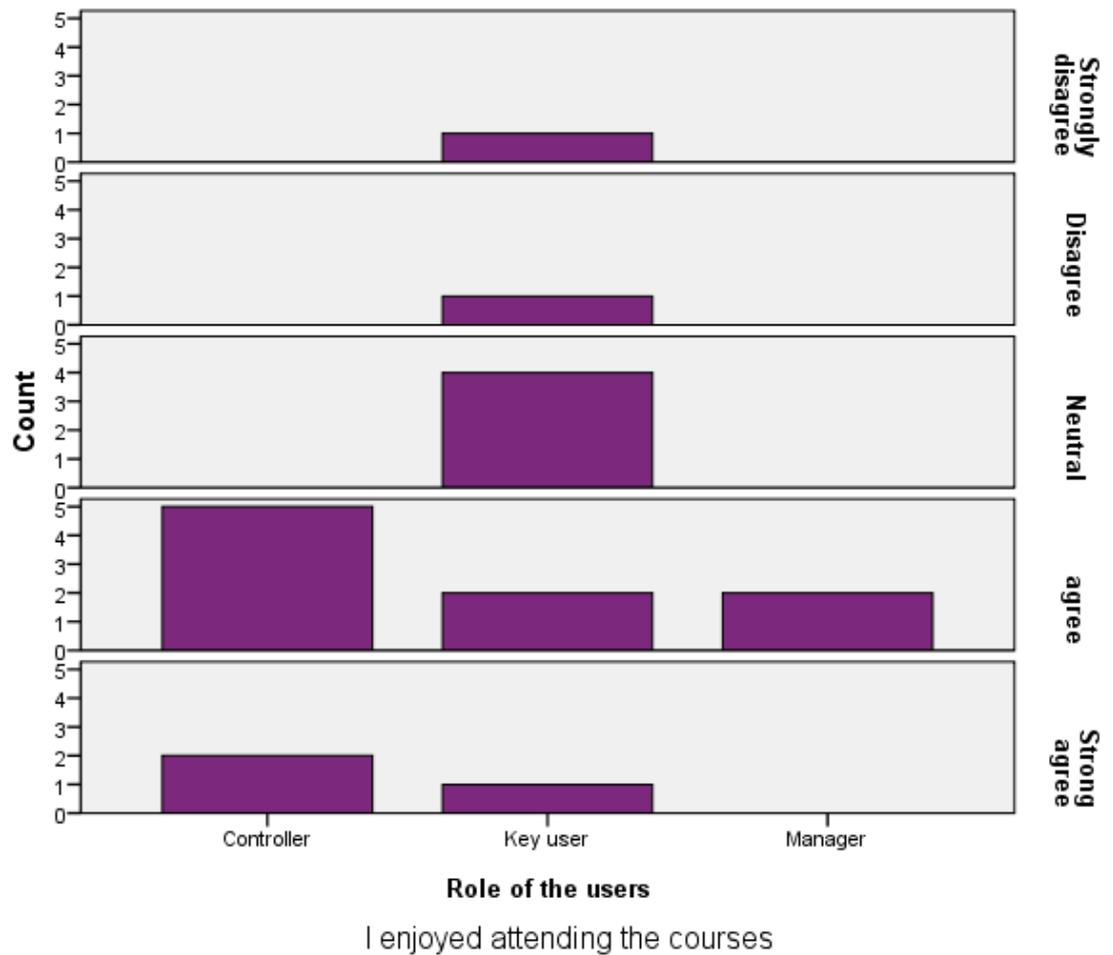
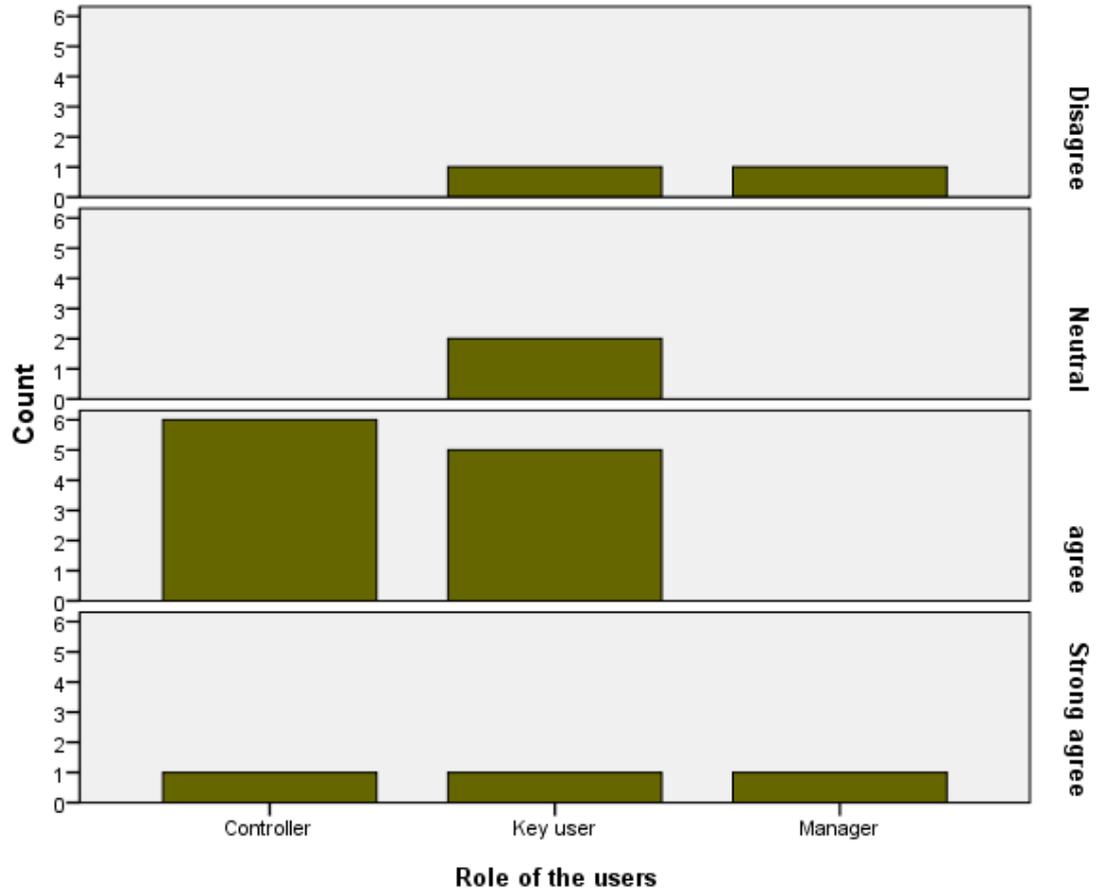


Chart 13 Were the attended courses enjoyable

5.15.5 Satisfaction with own level of preparation and participation

In addition to the evaluation of the provided courses, it could be very interesting to find out the evaluation of respondents' satisfaction level of their own preparations and participations of the courses. This result showed in chart 14 that most of the respondents from all user levels were satisfied with their own levels of preparation and participation in SAP courses. A few respondents from key user group and manger group were not happy with their own attendance of the SAP courses.



I was satisfied with my own level of preparation and participation

Chart 14 Satisfaction with own level of preparation and participation

5.16 Needs of new or refreshing SAP training course

Question 15: What is your current feeling – do you think you need new or refreshing training course in the use of SAP?

- If YES, please specify what kind of training_____
- NO

Training is a crucial part during and after launched a new operation system. This was very important question to ask in order to find out if there were any needs for new or refreshing SAP training course. And as the result showed, 83.33% of respondents declared that they would need new or refreshing SAP training courses. It was very impressive that most of the SAP users would like to take additional training courses to improve and increase their knowledge of new SAP system. To be more specific, all of the respondents from manager group would like to take more training courses probably meant the management training and administration training. And most of the respondents from Key users would like to take more training courses, in order to be more confident with the new system.

There were many comments were received on this subject to explain the reasons why the new or refreshing courses needed. In general, these topics were from many different aspects: Some of the respondents claimed that they needed new SAP training course, because there were not repeating courses frequently provided so that there was lack of opportunity to participate in these courses or; some of the respondents needed to have refreshing SAP courses or specified SAP courses related with work in practice; and some of responses would like to have advanced SAP training course in order to have a better usage of SAP system.

5.17 Preferable training platform

Question 16: Which are the most suitable and acceptable training platforms for you at moment?

- Physical attendee to lectures
- Virtual training (video conference)
- E-learning
- Self-study (material provided by SAP administration)
- Other_____

For the future SAP courses training planning inside the City of Tampere, it would be very important for the organization to know the most preferable and suitable training platform to conduct the training courses to all levels of SAP users. As the table 7 showed the result, most of the respondents preferred physical attendee to lecture. It considered as very traditional way of study, as scientifically approved that it was the most efficient and effective way to study.

Table 7 Preferable of the training platform

		Statistics				
		Physical attendee to lectures	Virtual training (Video conference)	E-Learning	Self-study(Material provided by SAP administration)	Other
N	Valid	15	3	7	5	4
	Missing	9	21	17	19	20
	Mean	1,00	1,00	1,00	1,00	1,00
	Median	1,00	1,00	1,00	1,00	1,00
	Std. Deviation	,000	,000	,000	,000	,000
	Minimum	1	1	1	1	1
	Maximum	1	1	1	1	1

There were 7 respondents suggested e-learning, 5 respondents suggested self-study, study material provided by SAP administration. But from the bar chart 15 below, only management level users prefer this study method, and none of the responses from key users recommend this method. 3 respondents choose virtual training and these responses were mainly from manager and key user groups, none of the respondents from controller group recommend this method either.

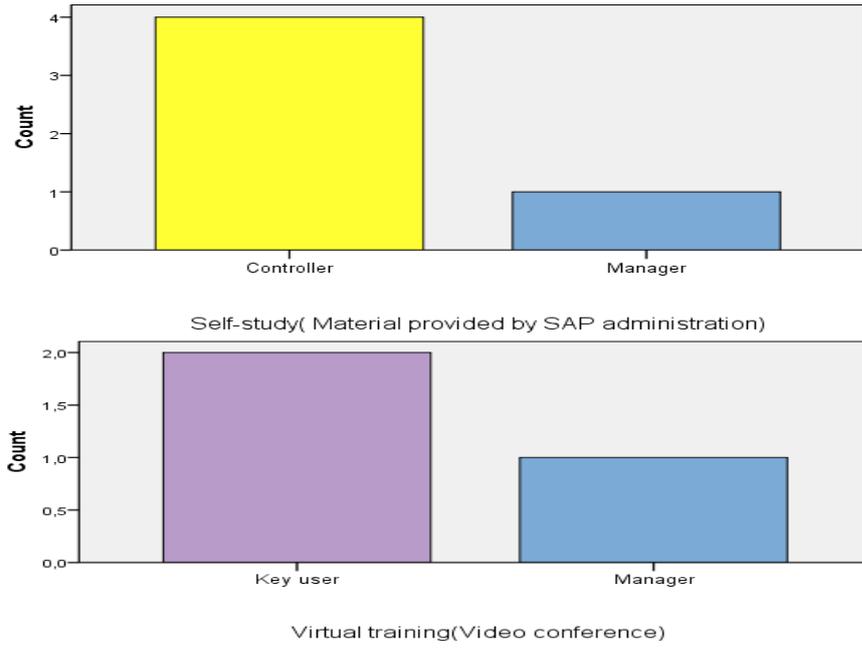


Chart 15 Training platform

6. Recommendations and final Conclusions

ERP systems integrate Supply Chain Management (SCM), Customer Relations Management (CRM); Manufacturing functions; Warehouse Management (WM); Human Resources (HR), and Financials functions in to one system. By using ERP system, companies gain more abilities of improving productivity and profitability. Numerous of companies have tried to adopt the ERP system to operate their business processes. City of Tampere is one large organization that applied the ERP system for improving the core competency.

The implementation of ERP system wasn't an easy task to complete. Especially for City of Tampere, the implementation process of the system was very complex and time consuming. Because of the good preparation and efficiency of the investment of the ERP project, the organization successfully replaced the old operation system with new SAP ERP system.

Managing and developing the new ERP system are the challenges to the organization today. In order to reach the ultimate goal of optimizing the business benefits from its ERP system, there are still some changes needed. After the intensive analysis of this survey, author has some recommendations to propose here to the City of Tampere:

The first is training; City of Tampere really need more SAP training courses to offer all SAP users. The result of the survey showed that most of the SAP users didn't receive enough training courses needed during and after the implantation of the new SAP system, further on, they are willing to take more training courses.

To key users, the new SAP system is unfamiliar with previous one, and required certain technical knowledge in order to operate and use the new system in the work. Additional training such as navigation in SAP interface, Training course of creating or modifying reports could be very helpful to them. It increased ability of using new system directly increase the productive of their work and confidents of the new working environment.

To management level, taking extra training courses will be necessary and useful for improve the management level to higher position. For instance, it will be easier and faster to solve the problems and also quicker to define the potential problems. To an organization, the more efficiency and productive of work that employees provide, the more benefit and values the organization will gain.

In order to make the courses interesting and useful, the course providers could consider couple suggestions. The contents of the lectures or material could be prepared for individual group base on participations' interests and needs. Simplifying the knowledge areas, avoiding to go too deep; so that participations could easily follow up the whole course. On the other hand, in order to encourage the participation join in the training system, manager could consider that rewarding the most active or efficient SAP users during the training process. Also it could be a good idea to provide a SAP discussion platform for all users to communicate and

cooperate with each other on SAP related issues.

As the author mentioned before, it is very important and crucial to have enough training courses provided during and after launching a new operation system. It will cost extra investment for the organization, but compare with the benefits that produced from training; both employees and employers will gain much more value and benefits out of that.

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Interview

Interviewee from management level, 19.11.2008, City of Tampere

Appendices

Appendix 1 – Questionnaire in Finnish

Title: Kyselytutkimus Tampereen kaupungin SAP-käyttäjille

Kyselytutkimus Tampereen kaupungin SAP-käyttäjille

Kiitokset osallistumisestasi tähän kyselytutkimukseen.

Kyselyn tarkoitus: Käyttäjäkokenusten ja –arviointien läpikäymistä ERP järjestelmän parantamiseksi Tampereen kaupungissa

Kyselytutkimukseen vastataan täysin nimettömästi, ja kyselyssä on vain yhteensä 16 kysymystä. Kyselyyn vastaamisessa ei mene kuin 5-10 minuuttia.

Suuret kiitokset ajastasi ja vaivannäöstäsi!

Maaliskuussa 2009

I. Oletko

- Käyttäjä tai avainkäyttäjä
- Tekninen tukihenkilö tai hallinnollinen käyttäjä
- Johtotasolta

II. Käyttöönotto

2. Osallistuitko SAP:n käyttöönottoprosessiin Tampereella?

- Olin nykyisessä asemassani kun SAP otettiin käyttöön
- Minut palkattiin SAP:n käyttöönoton aikana
- Minut palkattiin vasta kun SAP oli jo otettu käyttöön (Ole hyvä ja siirry kysymykseen 4)

3. Oliko käyttöönottoprosessi mielestäsi rankka?

- Kyllä
- Ei

4. Käyttöönottoprosessin aikana saitko tarpeeksi tukea ohjelmiston myyjältä ja omalta organisaatioltasi?

- Jos KYLLÄ, niin valitse kolme tärkeintä osa-alueetta, joihin sait tukea
 - Projektin suunnitteluun
 - Järjestelmän kehittämiseen
 - Projektin hallintaan
 - Tekniseen käyttöönottoon
 - Prosessin hienosäätämiseen
 - Koulutukseen
 - Ylläpitoon
 - Päivityksiin
 - Muu_____
 - En tiedä
- Jos ET, niin mihin kolmeen tärkeimpään osa-alueeseen olisit tarvinnut tukea
 - Projektin suunnitteluun
 - Järjestelmän kehittämiseen
 - Projektin hallintaan
 - Tekniseen käyttöönottoon
 - Prosessin hienosäätämiseen
 - Koulutukseen
 - Ylläpitoon
 - Päivityksiin
 - Muu_____
 - En tiedä

5. Onko SAP mielestäsi kehittynyt, joko itse ohjelman suhteen, tai siihen liittyvien toimintojen osalta?

- Jos KYLLÄ, niin mitkä ovat mielestäsi kolme tärkeintä parannusta
 - 1_____
 - 2_____
 - 3_____
- EI

6. Puuttuuko mielestäsi SAP:sta joitain ominaisuuksia?
- Jos KYLLÄ, niin mitkä ovat kolme tärkeintä puuttuvaa ominaisuutta
 - 1 _____
 - 2 _____
 - 3 _____
 - EI

III. SAP Tampereella tänään ja huomenna

7. Kuinka usein keskimäärin käytät SAP:ia työssäsi:
- Kerran kuussa
 - Kerran viikossa
 - 2-5 tuntia viikossa
 - 2-5 tuntia päivässä
 - Kaiken aikaa
 - Muu _____
8. Onko työssäsi ollut mielestäsi muutoksia SAP:in vuoksi?
- Olen tehokkaampi
 - Työni on monimutkaisempaa
 - Ei muutosta
9. Luuletko että SAP:ia käytetään tehokkaasti Tampereen kaupungilla?
- KYLLÄ
 - Jos EI, niin valitse yksi tai useampi kohta jolla voitaisiin tilannetta parantaa
 - Koulutusjakso ERP-järjestelmän parempaan ymmärtämiseen
 - Koulutusjakso SAP:n käyttöjärjestelmässä navigointiin
 - Koulutusjakso SAP:n muokkaamiseksi omaan käyttöön sopivaksi
 - Koulutusjakso raporttien tekemiseen ja muokkaamiseen
 - Räätelöityä opiskelumateriaalia eri käyttäjäryhmille
 - Keskustelupalstan luominen käyttäjille
 - Aktiivisen ja tehokkaan käytön palkitseminen
 - Muu _____
10. Onko SAP mielestäsi paras vaihtoehto Tampereen kaupungille?
- Jos KYLLÄ, niin suosittelisitko sitä muille?
 - Kyllä
 - En
 - Jos EI, niin millä tavalla SAP:n pitäisi kehittyä jatkossa:
 - Järjestelmästä täytyy tehdä helpommin hallittava ja ymmärrettävä
 - Ohjelmaan on lisättävä ominaisuuksia
 - Ohjelmaan on kytkettävä muita ohjelmia
 - Muu _____

11. Jos voisit tehdä päätöksen tänään, jatkaisitko SAP:n käyttöä?
- Jos KYLLÄ niin ole hyvä ja siirry kysymykseen 13
 - Jos EI niin valitse tähän vaikuttavat syyt:
 - Ei sopiva tarpeisiimme
 - Tekniset syyt
 - Tietokantasyyt
 - Ohjelman laatu
 - Ymmärtämättömyys ohjelman tarjoamista mahdollisuuksista
 - Ristiriidat muiden järjestelmien kanssa
 - Riittämätön koulutus
 - Muokattavuus
 - Muu_____
12. Olisiko mielestäsi jokin toinen ohjelma parempi
- Oracle Applications
 - Infor Global Solutions
 - The Sage Group
 - Microsoft Dynamics
 - Unit 4 Agresso
 - Lawson Software
 - Epicor
 - Visma
 - Industrial and Financial Systems (IFS)
 - QAD
 - NetSuite
 - ABAS Software
 - Ramco Systems
 - SIV.AG
 - Muu_____
 - Ei mikään
13. Jos käyttöönottoprosessi täytyisi käydä uudestaan läpi, mitä muuttaisit siinä.
Valitse niin monta vaihtoehtoa kuin koet tarpeelliseksi:
- Ohjelman moduulien valinta
 - Käyttöönoton henkilöstöorganisaatio
 - Projektin aikataulu
 - Projektin laajuus
 - Projektin hallinto
 - Projektin budjetti
 - Kommunikaatio
 - Käyttäjäkoulutus
 - Teknologiainfrastruktuuri
 - Ohjelman muokattavuus
 - Muu_____

IV. Opiskelu

14. Käyttönoton yhteydessä, osallistuitko minkäänlaisille kursseille?

- Jos KYLLÄ niin millaiselle? _____
- EN

15. Miten arvioisit koulutusta jota olet saanut:

▪ Saavuttivatko kurssit asetetut päämäärät ja oppimistavoitteet?
Täysin Ei lainkaan

▪ Suhteessa omaan työhösi, olivatko kurssit hyödyllisiä?
Erittäin Ei lainkaan

▪ Oliko opetusta helppo seurata?
Oikein helppoa Erittäin vaikeaa

▪ Olivatko kurssit mielestäsi mielenkiintoisia?
Oikein mielenkiintoisia Melko tylsiä

▪ Olitko tyytyväinen omaan valmistautumiseesi kursseille, ja osallistumisaktiivisuuteesi?
Oikein tyytyväinen Melko tyytymätön

16. Tuntuuko sinusta että tarvitsisit lisäopetusta SAP:in suhteen?

- Jos KYLLÄ, niin voisitko tarkentaa minkäläistä opetusta _____
- EI

17. Mikä olisi sinulle sopivin opiskelumuoto koskien SAP:ia?

- Luennot
- Virtuaaliopiskelu (esim. Videokonferenssi)
- Verkkopiskelu
- Itseopiskelu (SAP-hallinnon tuottaman materiaalin avulla)
- Muu _____

Appendix 2 – Questionnaire in English

Title: Questionnaire for SAP users in City of Tampere

Questionnaire for SAP users In City of Tampere

Thank you for your participation in our survey.

The object of this survey: studying SAP users' experiences and evaluations in order to improve the current situation of ERP system in City of Tampere

The questionnaire is absolutely anonymous and contains only 16 questions. Our testing suggests that survey will take approximately 5 - 10 minutes to complete.

We do appreciate your time and support.

March 2009

- I. Are you
- user or key user
 - Controller or administrator
 - Manager
- II. Implementation
1. Were you involved in the implementation process of SAP in City of Tampere?
- I was in my position before implementation began
 - I was hired during the implementation
 - I was hired after SAP implemented (please move to question 4)
2. Did you feel the implementation process was hard?
- Yes
 - No
3. Did you receive enough support and information during the SAP implementation both from the supplier and your own organization?
- If YES, select three main areas concerned
 - Project planning support
 - System design support
 - Project management support
 - Technical implementation support
 - Process redesign support
 - Training support
 - Ongoing support
 - Upgrades support
 - Other _____
 - I don't know
 - If NO, select the three main reasons concerned
 - Project planning support
 - System design support
 - Project management support
 - Technical implementation support
 - Process redesign support
 - Training support
 - Ongoing support
 - Upgrades support
 - Other _____
 - I don't know
4. Do you see any improved area currently in SAP, either in software itself or functions related to it?
- If YES, please list three main topics
 - 1 _____
 - 2 _____
 - 3 _____
 - NO

5. What are the missing functions in your current SAP system?

- If YES, please list three main topics
 - 1 _____
 - 2 _____
 - 3 _____
- NO

III. SAP in Tampere today and tomorrow

6. On average, how often do you use SAP related with your work:

- Once a month
- Once a week
- 2-5 hours a week
- 2-5 hours a day
- all the time
- Other _____

7. Do you feel has SAP been useful or helpful for your work

- More Efficient
- More complex
- No change

8. Do you think users really use SAP in an optimal way?

- YES
- If NO, which you would recommend to improve, select all applied
 - Training course for better understanding of ERP system
 - Training course of navigation in SAP interface
 - Training course for customizing and personalizing SAP
 - Training course of creating/modifying reports
 - Design Training materials for different user groups
 - Create a discussion platform for all users
 - Rewards for efficiency/ active users
 - Other _____

9. Do you think SAP is the optimal choice for the City of Tampere?

- If YES, will you recommend it to others?
 - Yes
 - No
- If NO, which way SAP should be developed in the future:
 - Restructuring the system to provide better maintainability and understandability
 - Adding additional or new module from core application
 - Adding or substituting other application to core application
 - Other _____

10. If you could make the decision today, would you continue using SAP?

- If Yes, please move to question 13
- If no, what are the main reasons, select all that apply:

- Not suitable for our needs
- Technical issues
- Data issues
- Quality of the software
- Lack of understanding of the software's capabilities
- Conflict with other systems
- Inadequate training
- Customizing
- Other_____

11. From which vendor you recommend, select one only

- Oracle Applications
- Infor Global Solutions
- The Sage Group
- Microsoft Dynamics
- Unit 4 Agresso
- Lawson Software
- Epicor
- Visma
- Industrial and Financial Systems (IFS)
- QAD
- NetSuite
- ABAS Software
- Ramco Systems
- SIV.AG
- Other_____
- None

12. If you have to do the implementation all over again, what would you like to change, select that all apply:

- Software module selection
- Internal team structure
- Project schedule
- Project scope
- Project governance
- Project budget
- Communications
- Training process
- Technology infrastructure
- Software customizes
- Other_____

IV. Training

13. Did you attend any training course during the implementation?

- If YES, please specify what kind of training? _____
- NO

14. How you evaluate these training courses you had:

- Did the courses meet the scope, aims and objectives
Completely Not at all
- Did the courses useful or helpful for your work related
Very useful Not at all
- Were the courses easy to follow?
Very easy Very difficult
- Did you enjoy attending these courses?
Very interesting Quite boring
- Were you satisfied with your own level of preparation and participation
Very satisfied Not very

15. What is your current feeling – do you think you need new or refreshing training course in the use of SAP?

- If YES, please specify what kind of training_____
- NO

16. Which are the most suitable and acceptable training platforms for you at moment?

- Physical attendee to lectures
- Virtual training (video conference)
- E-learning
- Self-study (material provided by SAP administration)
- Other_____