BUSINESS PROCESS REENGINEERING BY SAP BEST PRACTICE (MAKE TO ORDER) CASE STUDY PROCESS OF SALES FOR INDUSTRIAL PRODUCTION OF COPPER

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A THEMATIC PAPER SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE (TECHNOLOGY OF INFORMATION SYSTEM MANAGEMENT) FACULTY OF GRADUATE STUDIES MAHIDOL UNIVERSITY 2014

Thematic Paper
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ABSTRACT

The problems of the sales process for this case study of Industrial Production of Copper are that sales processes are duplicated and use a lot of paper within the customer and sales department. Therefore, Industrial Production of Copper would like to implement the SAP system to fix the problem of the sales process. However the SAP system is costly to implement. Therefore, Industrial Production of Copper would like to redesign the business process of sales using BPR (Business Process Reengineering) first to improve the working steps before implementing the SAP system. The research methodology was to study the sales process (As-Is) and SAP Best Practice (Make to Order) and then design a new sales process (To-Be). An evaluation of the new sales process was done by SAP experts using an evaluation form to ensure that this process can be applied during implementation of the SAP system.

The new sales process has been evaluated by SAP exports and the result is good. Therefore, the new sale process can be applied during implementation of the SAP system, but SAP experts suggest that it should be required for other departments, not only the sales department, to ensure that it will fix the problems of all departments within Industrial Production of Copper.

KEY WORDS: BUSINESS PROCESS REENGINEERING/SAP/As-Is/To-Be/Best Practice

64 pages

การปรับปรุงกระบวนการขาย โดย SAP BEST PRACTICE (MAKE TO ORDER)
กรณีศึกษาธุรกิจโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง
BUSINESS PROCESS REENGINEERING BY SAP BEST PRACTICE (MAKE TO ORDER)
CASE STUDY PROCESS OF SALES FOR INDUSTRUAL PRODUCTION OF COPPER

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บทคัดย่อ

เนื่องด้วยปัญหาที่เกิดขึ้นจากกระบวนการทำงาน ของระบบงานขาย สำหรับกรณีศึกษาธุรกิจโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดงในส่วนของขั้นตอนการขายที่ยังมีขั้นตอนการทำงานที่ซับซ้อน มีการทำงานซ้ำในหลายขั้นตอน มีจำนวนปริมาณการใช้เอกสารในการทำงานค่อนข้างสูงซึ่งส่งผลต่อประสิทธิภาพการทำงานในระบบงานขายขององค์กร ซึ่งเป็นระบบที่ติดต่อกับลูกค้าโดยตรง ดังนั้นทางองค์กรได้เล็งเห็นความสำคัญ จึงต้องการนำระบบ SAP มาประยุกต์ใช้ในการพัฒนาเพื่อลดปัญหาในด้านต่างๆ ที่กล่าวมาในข้างต้น แต่เนื่องด้วยระบบ SAP ต้นทุนการพัฒนาค่อนข้างสูงจึงเล็งเห็นให้มีการพัฒนากระบวนการการขาย ซึ่งในที่นี่จะกล่าวถึงการทำ Business Process Reengineering (BPR) หรือ การรื้อปรับปรุงกระบวนการทางธุรกิจ ก่อนเพื่อให้ได้กระบวนการขายที่ดีที่สุดก่อนการพัฒนาระบบ SAP

จากการศึกษา การรื้อปรับปรุงกระบวนการทางธุรกิจ กรณีศึกษากระบวนการขายธุรกิจโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง โดยศึกษา กระบวนการขายเดิม (As Is) กับ SAP Best Practice (Make to Order) เพื่อออกแบบกระบวนการขายใหม่ (To Be) และทำการประเมินความเป็นไปได้ในกาานำกระบวนการขายใหม่ไปประยุกต์ใช้ในการพัฒนาระบบ SAP โดยผู้เชี่ยวชาญทางด้านระบบ SAP

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CHAPTER I
INTRODUCTION

Current sales process of industrial production of copper was taken as a case study as a company with operations in the model. Manufacture and sell orders (Make to Order) from the customers have procedures and operating methods for managing the sales, the lack of flexibility and efficiency. The industrial production of copper, so there is a need to improve the operational management of the sales in order to enhance the management of sales and respond to customer needs quickly by running SAP applications for managing the sales to optimize and flexibility in operation and easy to use for data management access and data links include revision control information effectively. The application forms and procedures work best through SAP Best Practice (Make to Order).

For industrial production of copper a manufacturing business that wants to manage the system and effective to focus on making a difference clearly to increase profitability and enhance the performance of the organization until the needs of customers quickly. Accurate and efficient in order to keep pace with technology organizations or an integrated management system thus increasing the efficiency of operations for the organization including accuracy and the ability to verify the information and helps build credibility in the business. This is important for businesses. The SAP (Systems, Applications and Products in Data Processing) is business software is in a group of software for enterprise resource planning or ERP (Enterprise Resource Planning), which SAP has established itself as a leading software performance. It is used extensively throughout the world. The SAP system can accommodate any style, whether it is the production business. Business Trading Retail Business or specialized business services from SAP composite multiple units called modules (Modules) but the module which is responsible for managing administrative tasks that are different but can work together more efficiently reclaimed are linked to each other completely. Therefore, the SAP system is a system that helps to manage all

areas of business. To access information quickly and working relationships with each other to get accurate information can be used to conduct business a secure database. So that users and administrators can browse and check the status of the company.

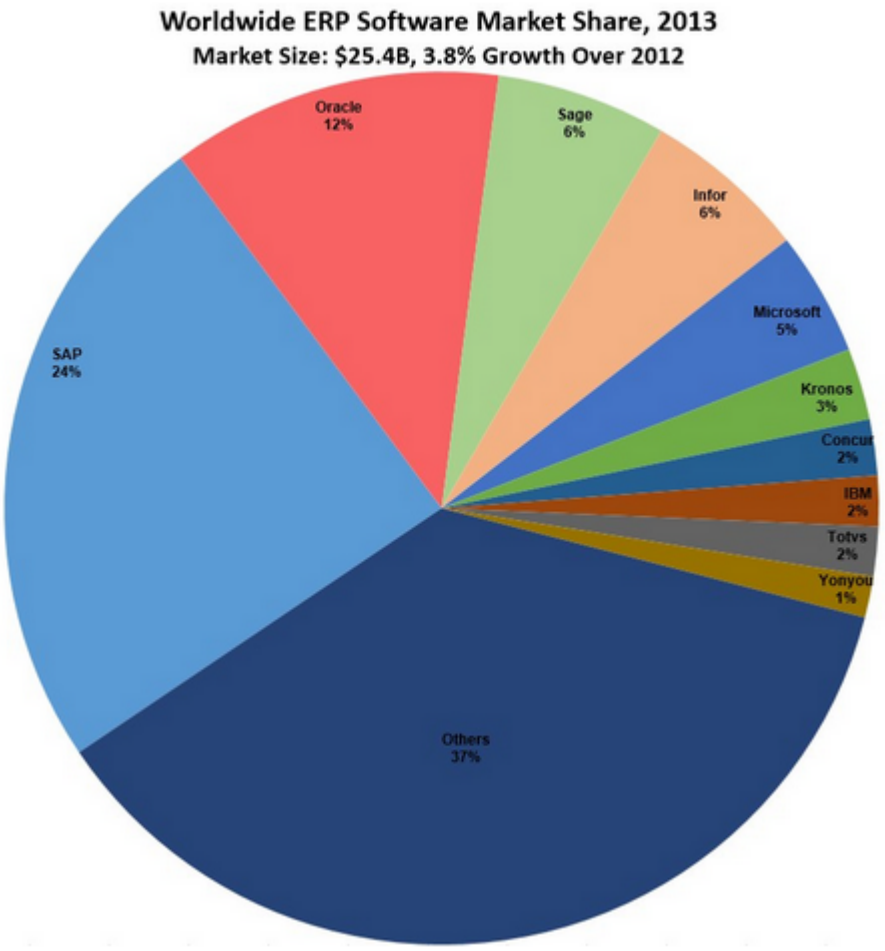

Figure 1.1 Worldwide ERP Software Market Share 2013

SAP has developed a software system to support business operations are changed regularly. Until the latest version of SAP ERP Central Component 6.0 or SAP ECC 6.0 which was developed to support the restrictions on business operations more complex by adding various functions. The highlight of the SAP system to focus on the accuracy and coherence of the data. When the recording of the actual (Real Time) and can detect the source of the events every event that happens to items that are saved.

Sales process case studies of industrial production of copper by using SAP Best Practice (Make to Order) to improve sales process is defined in the Business

Process that have been tested and explored it as a Best Practice in the industry in the ERP so that you can see that. Many businesses have to Implement the ERP was to result in the Business Reengineering. I want to change the organization's compliance with the Business Process Business Process as a Best Practice in the industry.

1.1 Significance of the Problem

Development and improve sales for the case of industrial production of copper. There are expected to be received. What is the approach of business process improvement (Business Process Reengineering) as ways to improve the process of Sales by using SAP Best Practice (Make to Order) to develop and improve the system to provide more efficient. And can be the result of the different sales processes are applied to a model for the development of the SAP system.

1.2 Objectives

To streamline the sales process of industrial production of copper by using SAP Best Practice (Make to Order) with the following objectives.

1.2.1. To adapt the process, improve business processes (Business Process Reengineering) as ways to improve the process of Sales.

1.2.2. To SAP Best Practice (Make to Order) to improve the process of sales in order to enhance the performance.

1.3 Expected Outcomes/Benefits of Study

1.3.1 To understanding regarding to process of sales (As-)

1.3.2 Knowledge, understanding regarding to BPR (Business Process Reengineering) and SAP best practice (Make to Order)

1.3.3 To design process of sales (TO BE)

1.3.4 Knowledge, understanding and awareness of business process reengineering (BPR).

1.4 Scope

1.4.1 The process of working with the Business Flow Sales of industrial production of copper.

1.4.2 Study the work of the Sales SAP Best Practice (Make to Order).

1.4.3 Analysis GAP Analysis for restructuring process of industrial production of copper.

1.5 Duration of Study

Table1.1 Duration of Study

Detail	Month							
	Apr 2014	May 2014	Jun 2014	Jul 2014	Aug 2014	Sep 2014	Oct 2014	Nov 2014
Study process of sales (As-Is)	←	→						
Study SAP Best Practice (Make to Order)		←	—	→				
Design process of sales (To-Be)				←	→			
Evaluation by SAP experts						←	→	
Compare the results							←	→
Summary of the results								← →

1.6 Research Methodology

1.6.1 To study the process of sales. (As-Is)

1.6.2 To study SAP best practice (Make to Order).

1.6.3 To found GAP analysis

1.6.4 Design new sales process (To-Be)

1.6.5 To evaluate by SAP expert.

1.6.6 To summary of the results from SAP expert.

1.7 Definitions

1.7.1 As-Is

To study and understand in current business process

1.7.2 To-Be

To improve process and design new process

1.7.3 ERP

Enterprise resource planning (ERP) is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources. ERP software integrates all facets of an operation, including product planning, development, manufacturing, sales and marketing.

1.7.4 SAP

System Application Product (SAP) SAP is an ERP system. ERP stands for Enterprise Resources Planning. ERP term used for software that controls whole organizations different departments for example, SAP, Oracle, People Soft, JD Edwards are some of the top ERP software systems.

SAP is beautifully and neatly integrated ERP software. SAP is a leader when it comes to easy integration among all the departments. It provides industry specific solutions for different industries other its basic SAP modules. SAP suit contains SAP FI, CO, SD, MM, PP, HR, PA and other modules. It also comes with SAP PS, FSCM, CRM and BO/BI modules. Although it will be client's decision whether they want to buy all modules or some specific modules. SAP comes with some industry specific solutions as well such as Insurance, Security, Apparel and Footwear (AFS) etc.

1.7.5 BPR

Business process reengineering (BPR) is the analysis and re-design of workflows within and between enterprises in order to optimize end-to-end processes and automate non-value-added tasks.

1.7.6 Process

Generally, a collection of practices influenced by the enterprise's policies and procedures that takes inputs from a number of sources (including other processes), manipulates the inputs and produces outputs (e.g., products, services)

1.7.7 Average

This is a term that is used, mis-used and often over used. Typically, many individuals refer to average when they really mean the arithmetic average (mean). Average can mean the mean, the median and the mode, it can refer to a geometric mean and weighted averages.

1.7.8 Standard deviation

The standard deviation (SD) (represented by the Greek letter sigma, σ) measures the amount of variation or dispersion from the average. A low standard deviation indicates that the data points tend to be very close to the mean (also called expected value); a high standard deviation indicates that the data points are spread out over a large range of values.

CHAPTER II
LITERATURE REVIEW

2.1 ERP (Enterprise Resource Planning)

Figure 2.1 ERP Modules

ERP concept began in 1990 in the USA. Origin outset of ERP from the concept of developing a management system integrated manufacturing (Material Requirement Resource Planning / Manufacturing Resource Planning, MRP System) of the manufacturing industry in the United States by the ERP and the concept of ERP was developed from MRP (Material Resource Planning).

Origin of MRP concept MRP was the first American in the early 1960s during the first MRP stands for Material Requirement Planning (the MRP) is a method of finding the type and amount of material to be applied to the production schedule and the number of already planned by the MPS (Master Production Schedule).

Closed Loop MRP approach the year 1970 MRP has been developed with the ability to feedback actual production data in the shop floor, but also to the idea of requirements planning, capacity (Capacity Requirement Planning).

MRP II led to the development of the success of Closed Loop MRP was the development of a MRP II in 1980 (by MRP now stands. Manufacturing Resource Planning), which includes the planning and management of other manufacturers in addition to planning and control capacity of manufacturing and materials into the system.

From MRP II to ERP MRP II concept is used in the manufacturing industry, ERP has expanded the concept of MRP II is available in a variety of business organizations by combining all the main system in the organization into the system, the nature of ERP.

ERP Software is used to manage the organization by a Centralized Database or any data stored in different segments. At the same To avoid duplication of data Share information with the potential to fetch the highest Each unit has its own analysis and be able to do it all, whether Integrate Marketing Manufacturing Accounting and Staffing.

Prior to the ERP system that existed in the industry around the 1960s, bringing the computer to help in the production computing demand for raw materials used in production. Known informally as the Material Requirement Planning (MRP), we will use the computer system to assist in the administration and management of raw materials or Material used in production. Later, in the middle 1970s, the manufacturing industry is becoming increasingly complex, thus bringing the computer to help in the production side of the machine (Machine) and the finance (Money) in addition to the ingredients will call such a system of Manufacturing Resource Planning (MRP II).

From this point, we could see a rough picture of implementation a computer system to assist in the management of the industry. As a specialist in handling many of you have said that the MRP system that will help manage the Material of MRP II system that will help in the management of M two more than the Material is Machine. Money and MRP II system TIMS title of New Zealand. The main menu of the Main Module 3 Modules with the Financial Accounting, Distribution and Manufacturing and Manufacturing Module of the MRP will be included.

It can be seen that the introduction of MRP II system to help in any organization, it is not possible to support the work of the organization. This is the origin of the ERP system, which incorporates part of the M final was Manpower into the system that calls itself the ERP so that the ERP system is a system that is used in the management of all resources in the enterprise. (Enterprise Wide), or in other words, is that the ERP system is a system used to manage 4 M, which will consist of Material, Machine, Money and Manpower, so that if you look at the main menu of the ERP system will be found there the menu of the MRP and MRP II included because ERP originated from MRP and MRP II system itself.

ERP is focused to do Business Reengineering. To improve access to the ERP which is divided into four parts of the function area.

- Marketing Sales
- Production and Materials Management
- Accounting and Finance
- Human Resource

Each section is a Business Process in which there are many Business Activity combinations such as Invoice as Activity Each Activity to consecutive multiple out into the Process called "Computer Order Management" which will. Functional Area associated with the so-called "Marketing and Sale" Concept core of ERP is to take all the information of each department to Integrate Share information.

ERP is software that has been collected or integrates all functions in the organization or has a link on the part of all the modules together. We have been working in real-time and ERP is designed based on industry best practices that (Best Practice) is a set of business processes. Is tested and explore the past, that is how the best in the industry that in the ERP.

Thus we see that there are many businesses that have implemented ERP to the left in the Business Reengineering. I want to modify the business processes of the organization, according to the process as Best Practice by the ERP software can be adapted to the nature of the operations of the organization. (Also known as the Customizing or Configuration), which in theory is divided into two categories: software, software packages and Customizing Software Package.

The difference both types of software is Software packages that we cannot change the system and the software was based on its needs. Each business to modify the software to fit its business. I may have to modify the software itself, but if it ever Customizing Software Package of the system software. Provides a section called Customizing for us to modify the software to the pattern in the business of the organization.

Just talking about Key technologies the push for ERP software is a technology database and client / server ERP system because it is a system that integrates all the functions of the organization. So, the data need to be stored in a central database client and server due to change working patterns of the data record from the old system to work in the back office as a form of work on your part. Front Office, which want the screen in a graphical manner (Graphic User Interface: GUI) is not a show, but the characters. As before Therefore, client / server, so it can meet the demand for this technology.

If you study the history of a software system, I actually found a business in the past, about the beginning of the 1970s, those who are in software development teams to various organizations. There is a need to develop system integration, software packages, but with technology database which is yet to come. Form of software in this manner, it cannot happen. System of ERP systems is as follows.

- **Accounting and Finance (Financial Accounting).**

The system is connected to the other sub-systems completely. You can record an account of the various sub-systems so it can reduce the task of recording transactions, down significantly, so that the account can be modified to work. To analyze and managed account fully. It also makes various accounting information has been adjusted to match the transactions occurred and allows administrators to track

performance over time. The system consists of general ledger. Accounts Receivables Accounts Payable Accounting cost center / profit center management budget.

- **The fixed assets (Asset Management).**

The Module to support the control of assets and the fixed asset accounting system is linked to the general ledger for any transactions that occur.

- **The HR (Human Resource Administration).**

The system helps to support communication between the organization and employees Facilities for employees to be able to create. View and edit their own information using various technologies to help, but also a system that allows employees to manage the life cycle. Since the selection of candidates for employment help in the search and select the right staff with the expertise of personnel. Establish standards for measuring performance. And also plans to train staff to be most appropriate for the individual agencies.

- **Procurement and inventory management systems (Purchasing and Inventory Management).**

This system consists of Subsystems to support the work of the user. Different as follows

  - System Procurement (Purchasing) support the work of the purchase of the various agencies to prepare an order. Shipping and handling invoicing. In order to process the accounts payable system.
  - Inventory Management Inventory (Inventory Management) Supports detailed package information. Status of the parcel data location, movement of supplies. Data supplies Receiving Warehouse loading the disbursement of supplies. International migration the count of the parcel the system will automatically record the Financial Accounting (Financial Accounting) when a transaction has been disbursed to transfer between warehouses and so on.

- **Managed Inventory (Warehouse Management).**

As a leading internet technology used in conjunction with the procurement businesses. This business model is a procurement to achieve market where buyers and many sellers. Can meet The cost in terms of money and time to a minimum. And can be traded under the price in the form of Dynamic Prices have been instrumental in enabling buyers to find sellers who can provide the price and terms of the organization. The transactions via the internet can bid via the Internet Can be used to facilitate the opening of bids. The system can be operated via the Internet and storage bidding. Impose conditions on the auction.

- **Sales and Distribution Systems (Sales and Distribution).**

The system for processing items sold by covering the preparation of quotations and the sales records shipping as well as invoicing which consists of the following sub-systems

  - Point of Sale (Sale)
  - Digital Delivery (Shipping & Delivery)
  - Invoicing system (Billing)
  - Various subsystems are linked together. Meanwhile, management sales and distribution be linked to other systems makes it possible to update the information as practical report browsing fast and accurate system information and other links in the same report for data analysis and decision support operations such as sales slip. Can monitor the customer's credit facilities automatically Real time monitoring and booking volume of inventory will be sold automatically.

- **Maintenance System (Plant Maintenance).**

The system was used for the storage of technical equipment. Used in the production and transmission of electricity, such as the station's electrical grid. This system can help increase the efficiency of maintenance work. Management costs performance evaluation the risk assessment will happen. It covers the operation since the schedule of maintenance. Related info amount of resources required the time required, including budget control involved. The system also can store details of daily

work and support for the analysis and management decisions. Including links to the various systems involved.

- **Management Manufacturing (Production Planning).**

This system supports manufacturing management. The separation process is as follows.

- Planning Production Management (Production Planning).
- Production through production orders (Production Order).
- Continuous production (Repetitive Manufacturing).

Subsystems are linked together. At the same time production management system can be linked to other systems, which includes updated information on current practitioners. Report browsing fast, accurate, and links to other information systems, data analysis and decision support for the operation and integration with other systems, including production management.

- Management, Sales and Distribution (Sales and Distribution).
- Procurement and inventory management systems
- Accounting cost center / profit center (Cost Center Accounting).

- **Information systems for executives (Executive Information System).**

This system serves to generate information data (Data Warehouse) for support of management. And management decisions and can be linked Transfer data from other systems within the department automatically after a specified period. Including the ability to connect and transfer data from external sources. The system also can retrieve data from the data warehouse to analyze calculations support the preparation of management information for the specified period. Using data from the ERP system and allow the management of complex cross-functional data analysis. As well as the methods and techniques of management strategies, such as Activity Based and Management, value Based Management and Balanced Scorecards, so the system, thereby reducing the gap between strategy and its implementation in the organization.

- **Project System (Project Management).**

This system is capable of planning and budget management, including costs for projects such as the construction or maintenance of defense. Project Management includes the following functions.

- Database Project (Project Master) as a mass storage project (Project) and project (Work Breakdown Structure - WBS) can be determined Milestone and determines the Hierarchy, including data storage details of work or project as the start date and end date. The system also supports Graphic or overlay projects on a Gantt chart with.
- Budget Management Project (Project Budgeting) is designed to control the budget for each project. You can store the budget each year. The system has helped to establish and monitor budgets.
- Project planning and scheduling of work (Project Planning & Scheduling).
- Storage and distribution costs (Project Settlements are system that supports the storage side. The expenses incurred for each job (Work Breakdown Settlement) and can refer to document expenses. In Accounting and Finance (Financial Accounting) to detect it.

- **The Treasury (Treasury).**

The system is able to support financial planning in accordance with the various aspects of income and expenses to know the flow of money in and out. The sources of funds to support projects that provide for the settlement plan, including the installment due to corporate currency in many situations, the conditions of the organization. This project consists of the following sub-systems.

- **Cash Management System (Cash Management)**

Cash management can be estimated from / paid for a period of time and to support reconciliation with the bank.

- **Budget and Funds Management System (Budget & Fund Management)**

To define the structure of the budget an assortment of budget concluded between the budget and the amount actually used. Payment can be controlled by source of funding. According to the approved budget

- **Strategic management system (Strategic Enterprise Management).**

Business-oriented management support Management of the business value the support and prioritization decisions. The overall goals of the organization present information to top management, data analysis, cross-functional complex. It will be linked to data provided by information systems for executives (Executive Information System), which includes systems.

  - Monitor the performance of the organization Corporate Performance Monitor in the support for the analysis of the views and interpretations of key performance indicators (Key Performance Indicator - KPI) by these movements cause the technique a new perspective to enhance the handle. This element also allows modeling. To assist in the self-assessment, such as Balanced Scorecards, Value Driver Trees and Management Cockpit Scenarios.
  - Modeling and Business Planning Business Planning and Simulation in support of the overall strategy. Planning and execution of business on the data structure in ways that are consistent that including a business model linear change scenarios. Event planning Evaluation of risks. The allocation of resources on the part of business planning and forecasting of strategic goals KPI.

- **The Enterprise Portal**

The system was taken out of the system. Users want to be shown through Web Page as E-mail inbox the work of Module is responsible. Or the running of such exchange so the user can access the system via the Login once (Single Sign on), which enables users to customize the display of Web Page by User at Login added (Personalize) and can be activated from anywhere on the Internet.

2.2 SAP (System Application Products)

SAP was founded in Germany in 1972 (2515) head office in Walldorf, Germany, by the merger of the former IBM employees, and grown to become the fifth largest software company in the world. A company with more than 6,000 companies using SAP to more than 50 countries, more than 9,000 site's share of the market. client / server software for about 31% of the users increased 50% per year, with sales of SAP R / 3 increased by 70% per year.

In the beginning the aim Focus on big business. (Enterprise-scale) but has recently expanded its business to small and medium-sized customers.

ERP concept began in 1990 in the USA. Origin outset of ERP from the concept of developing a management system integrated manufacturing (Material Requirement Resource Planning / Manufacturing Resource Planning, MRP System) of the manufacturing industry in the United States by the ERP and the concept of ERP was developed from. MRP will be described herein. A brief history of the MRP that is how and why it evolved into the ERP, which will enable us to understand the meaning of the ERP was even better, and the concept of ERP, it has evolved from the ERP will be an Extended ERP and will develop into a Next Generation ERP next future.

In an age where the competition is higher organizations around the world are working to improve business performance. To enhance its competitiveness by the concept of resource management (ERP) system used in resource planning corporate business as whole. To achieve maximum utilization of resources by creating an ERP system needs to have the tools to create. The application software (Application software) and for the market of ERP software vendor has a large amount the top 5 major manufacturers including SAP, PeopleSoft, Oracle, JDEdwards SAP and Baan, which is regarded as the leader of the software sector due to the ERP market share as possible.

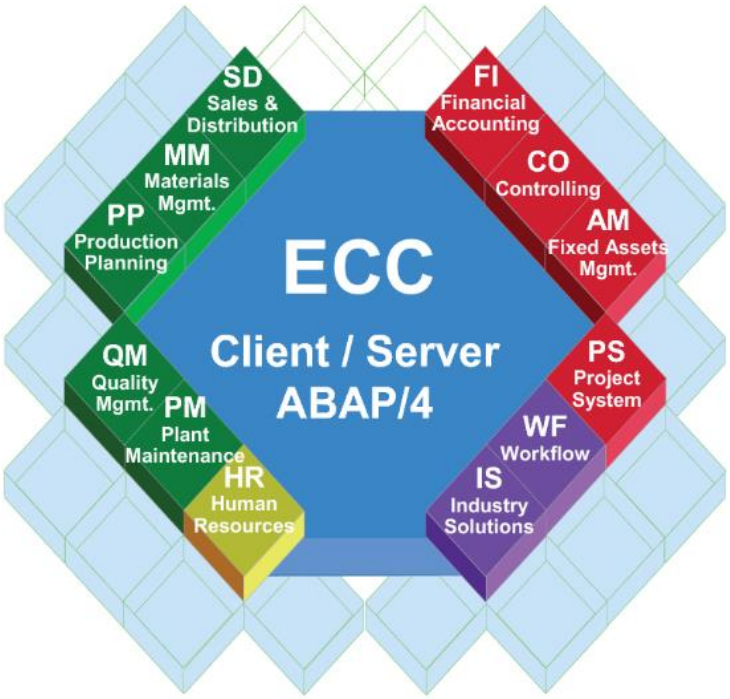

Figure 2.2 SAP Modules

- AM Fixed Assets Management module to manage the assets.
- SD Sale & Distributions Or the sales and distribution module.
- MM Material Management module of a raw deal.
- PP Production Planning module of production planning.
- QM Quality Management and the Quality Management module.
- PM Plant Maintenance module of Plant Maintenance.
- HR Human Resource Module of HR management.
- TR Treasury or the financial management module.
- WF Workflow Module Flow of the process.
- IS Industry Solutions is a unique business system.
- FI Financial Accounting module of accounting or finance.
- CO Controlling or module of accounting excusive management.

SAP is a program that helps manage all areas of the business to be able to access the information quickly and accurately can be used for the operation of the business and administrators can browse and check the status of own on the SAP modules that are responsible for many different tasks. The interplay of the Modules

will send information related to each other without overlapping each input Modules and has been developed in the form of base on Best Practice in Industry.

Summary, the SAP (System Application products) is a finished business sector ERP (Enterprise Resource Planning) in Germany to oversee all areas of the company SAP is the company name and brand of the genre ERP brands which ERP stands. Enterprise Resource Planning refers to the administrative control. Internal resources often there is a way that integrate multiple data link system. Since purchasing system Production planning, inventory management systems, cost accounting system, Sales and Distribution to asset management and personnel management.

I have several in SAP modules with different work functions. The interplay of the Modules will send information related to each other without having to enter redundant information in the Modules and have developed in their Based on Best Practice in Industry is defined in the Business Process that to test and explore it as a Best Practice in the industry in the ERP so that you can see that. Many businesses have to Implement the ERP was to result in the Business Reengineering. I want to change the organization's Business process Business process according to the Best practice in the industry.

2.3 BPR (Business Process Reengineering)

In today's world can be said that the competition in terms of quality and innovative products and services to be more important than the competition in terms of organization size or cost. While the Information Technology Information Technology (IT) plays a major role in increasing the advantage in the competition, however, most organizations leverage information technology or computer systems, just to speed up the process only original work that makes the performance has not been solved on the spot.

To achieve this goal the performance not only intranet only. The organization must have Reengineering the procedure is old and outdated, too. Thoughts on Business Process Reengineering (BPR) has occurred, with the main focus is to analyze and redesign procedures and regulations old at the same time to

strengthen the process of innovation with regard to the procedure in the snapshot. Professionally Instead of looking at the process of any one agency. The following key

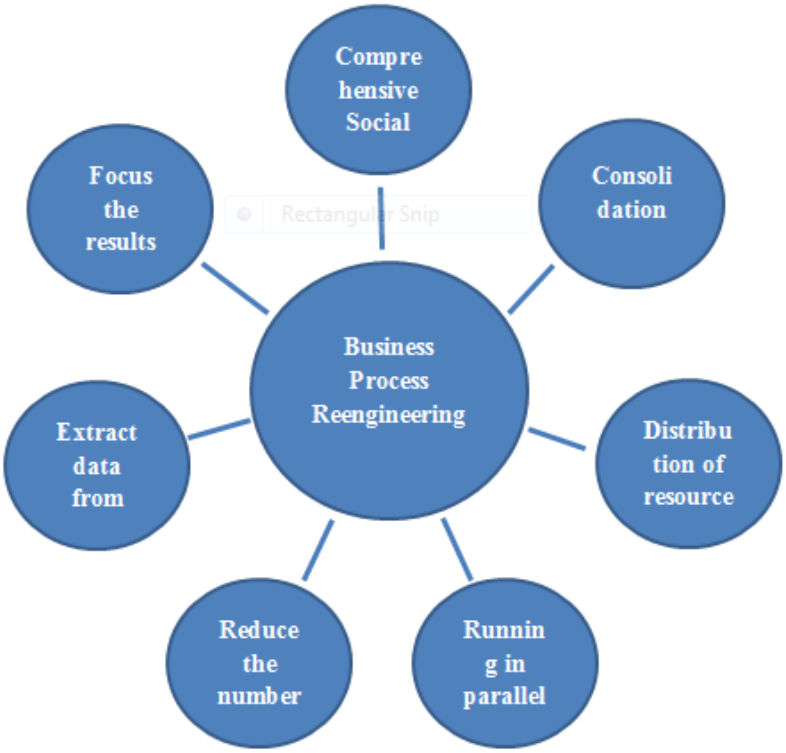

Figure 2.3 Concepts of BPR

2.3.1 Focus on Results

Reengineering the Pay attention to the (objective-or outcome-oriented) than the work (tasks), thus supporting the team, only one team every step of the procedure is to reduce time-overhead. The person to contact or transform and optimize their work because there are people who know the procedure and the entire state as a whole

2.3.2 Comprehensive Social

Is the idea that the desired result of the procedure is a procedure that is carried agencies can play a role and functions of more than one role.

2.3.3 Consolidation

Integrate the production and processing of information in the role of the same agency.

2.3.4 Distribution of resources

Corporate resources should be distributed to streamline and ease of use, but can be managed from a single point of information technology and communications have used to help organizations manage these distributed resources that such information, etc.

2.3.5 Running in parallel

The concept enables an organization to link the activities done in parallel, while it is in progress, rather than a number.

2.3.6 Reduce the number of command

The administration is making a flat and a decision on that point was the run-up to the authorities to decide on the job is done manually.

2.3.7 Extract data from source

To reduce data duplicate and the data should be collected once and then share that information from sources through the system.

2.4 Principles of BPR

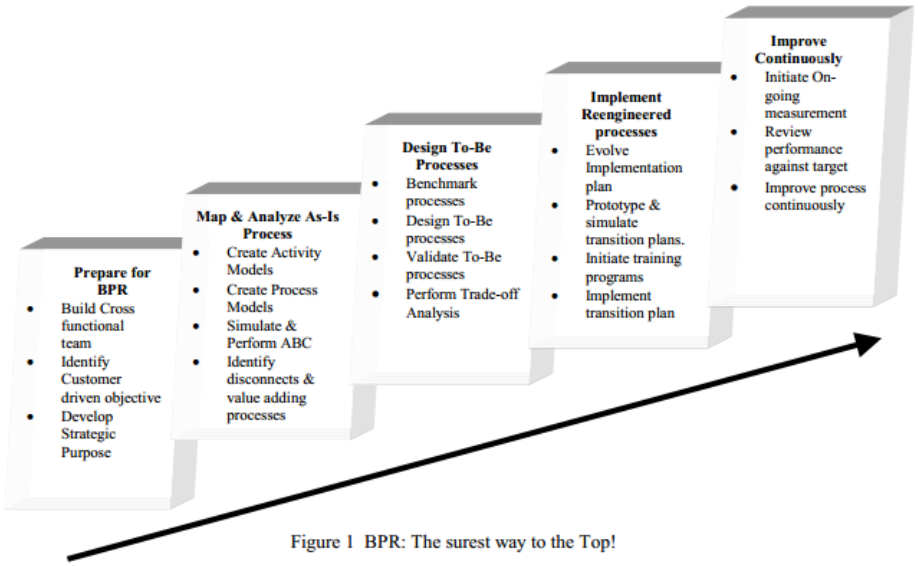

Figure 1 BPR: The surest way to the Top!

Figure 2.4 the re-engineering business.

2.4.1 Activity 1 preparation (Prepare for Reengineering).

Planning and preparation for any activity. A crucial element that will lead to success. Reengineering business should question whether business processes are needed that much to re-engineering the business. Finding the answer to this question is the beginning of a reengineering of business. This activity should be started with the management has realized the importance of reengineering business systems and the link between achieving business goals with the business reengineering. Another important issue before the policy of making the system reengineering of business is to understand customer needs and disabilities to the needs of business customers. On understanding the needs of customers, the company will be able to create a vision up, with the vision to be the catalyst that makes the reengineering of business success.

2.4.2 Activity 2 calibration and analysis of existing business processes (Map and Analyze As-Is Process).

Reengineering the business need to understand the business processes of an existing well before to be able to design a new business process. The purpose of this step is important. Trying to analyze the current system to find out what the problem is not in the business process requirements and find ways to improve business

processes. This is achieved by modeling business processes using different modeling. Then, calculate the time and cost spent on the process. Of business processes using both simulation and calculating cost. This modeling allows us to understand the foundations of the business process as well.

2.4.3 Activity 3 new process design (Design To-Be Process).

The purpose of this phase is a good way to fix it is to achieve the business goals that are set in the first step. When ideas to improve business processes and then. It comes to the process of creating new business processes To-Be process. We need to analyze new business processes. By calculating the time and cost required for the various stages of the process, and then to analyze the pros and cons for each new business processes. To select new business processes for actual applications.

2.4.4 Activity 4, the process of re-adaptation of the result (Implement Reengineering Process).

Implementing a new system designed to use. Should be done with great caution and should be prepared for that as well. The introduction of a new process designed to actually go smoothly. In this plan, modify existing business processes to new business processes. This plan must also include the change in the organization. Information technology and the company's policy to comply with the new business processes as well. The improved information technology systems that contribute to the business process reengineering success dramatically. Prototyping techniques and simulation techniques to help determine benefit plans as well. The final step of this phase is to establish a training program for a change in the company and its plan to switch to the full.

2.4.5 Activity 5 continuous process improvement (Improve Process Continuously).

Implementing a new system designed to use. Should be done with great caution and should be prepared for that as well. The introduction of a new process designed to actually go smoothly. In this plan, modify existing business processes to new business processes. This plan must also include the change in the organization.

Information technology and the company's policy to comply with the new business processes as well. The improved information technology systems that contribute to the business process reengineering success dramatically. Prototyping techniques and simulation techniques to help determine benefit plans as well. The final step of this phase is to establish a training program for a change in the company and its plan to switch to the full.

2.5 Related Research

2.5.1 Mr.Supoj Laongaam and Thanunya wasusri (2550)

The study process improvement fill orders with business process modeling case study of the textile industry in India. The results of processing models found. The 95 percent confidence level, the results of the processing model is found. The confidence level of 95 percent, the average duration of the operation of the replenishment orders (Average order fulfillment cycle time) is 118.89 days, the median is the average time spent on the purchase and preparation of raw materials as well as out. the entrance The raw materials are produced (Average total source cycle time to completion) 74.52 days and the average time spent in the production of the finished product, including the production of documents, the time it takes to deliver the goods (Average total build time) 44.47 days.

2.5.2 Walailuk Autteerawong (2556)

Conducted a study to improve business processes through Simulation This study, the researchers collected data on the production side of the case study interviews with stakeholders and entrepreneurs to find ways to improve the operation of the organization to be more effective. The proposed guidelines for improving the operation of the organization with the simulation by the simulation process improvements in various forms all four models, the study found that the model situations where one is more appropriate. The second is a simulation model that is 4 scenarios 1. Which improved by adding more staff in front molding to reduce bottlenecks in the process down. And to reduce the coating by the employees in the

department work in front coated with spray paint. That can produce up to 20 units per day, and the waiting period in the fall compared to the current situation 13.68 minutes Simulation 4. Improved by modifying the location (Layout) of each department by department, making up the floor with the other departments. Add staff in the department making them more. To reduce bottlenecks in the process and to reduce the coating process by allowing employees to work in the department painted in front coating. The results show that it can produce 21 units per day, and the waiting period is in relative decline. The current situation, 9:44 min, the findings are consistent with the research of Paul the beauty and Thananthorn Wasusri (2550), the model proposed business process as a tool to improve replenishment orders. The results showed that the restructuring of work and responsibilities will make the time to replenish inventories Incidentally, although Simulation 1 and 4 are a number of parts produced per day very different If you consider the risks, the simulation model 4 can reduce the risk of damage to the work piece may be a fracture of the specimen from the transport layer and reducing waste (Waste). of Transportation (Transportation), and unnecessary movements.

2.5.3 Punyawee Srisuchart

The study of business reengineering and the problem is Accounting organizations are one. With their employees 500 people, mostly within the department the account is assigned to the 2 parties Revenue Accounting Department and Central Cash Unit.

This requires a receipt for payment of approximately 3.5 million, making an impact on costs within the organization. The organization has a policy to reduce costs by 8-10% for long-term returns, so investors do BPR (Cash Process) found that companies do BPR success by being approximately one year the results are satisfactory. The summary is

- Steps to Business Process step down from 422 to 237, representing a number of steps have been reduced by 44%.
- Dealing with pay-per-month, down from 42,000 to just 4,000 transactions per month. A decrease of 90%

- To pay an unidentified account (Unplaced cash: payment cannot be credited to an account), down 43%.
- Questioning the prospects of the organization continue to pay down 44%.
- Number of employees in the accounting department was reduced by 45%, the cost of the Company by approximately $ 930,000 per year.

CHAPTER III
MATERIALS AND METHODS

Sales development and process improvement of case study for industrial production of copper. The process of dismantling the system (Business Process Reengineering) from the brainstorming session, analysis of existing processes to design new processes and after adjustment process is a process that can lead to effective or practical. Including improved continuously. With reference to the improved business processes (Business Process Reengineering) to get a new process that is efficient, accurate and can be estimated to be close to reality as a result, the new system and process quality and performance and can be used practically with SAP.

3.1 Objective of BPR

3.1.1 Develop to modern business

3.1.2 Support business competition

3.1.3 Reduce process and working time

3.1.4 Fast response with customer

3.1.5 Data centralization to be used in the analysis of sales organizations. Planning of the organization Council against the cost to and corporate profits

3.2 Research Methodology

3.2.1 To study with sales process (As-Is).

3.2.2 To study with SAP Best practice (Make to Order)

3.2.3 Identify GAP analysis

3.2.4 Design new sales process (To-Be)

3.2.5 Design evaluation form after design new sales process with SAP

3.2.6. Evaluation by SAP export and analysis the result

3.2.7. Summary and suggestion

3.3. Sales process (As Is)

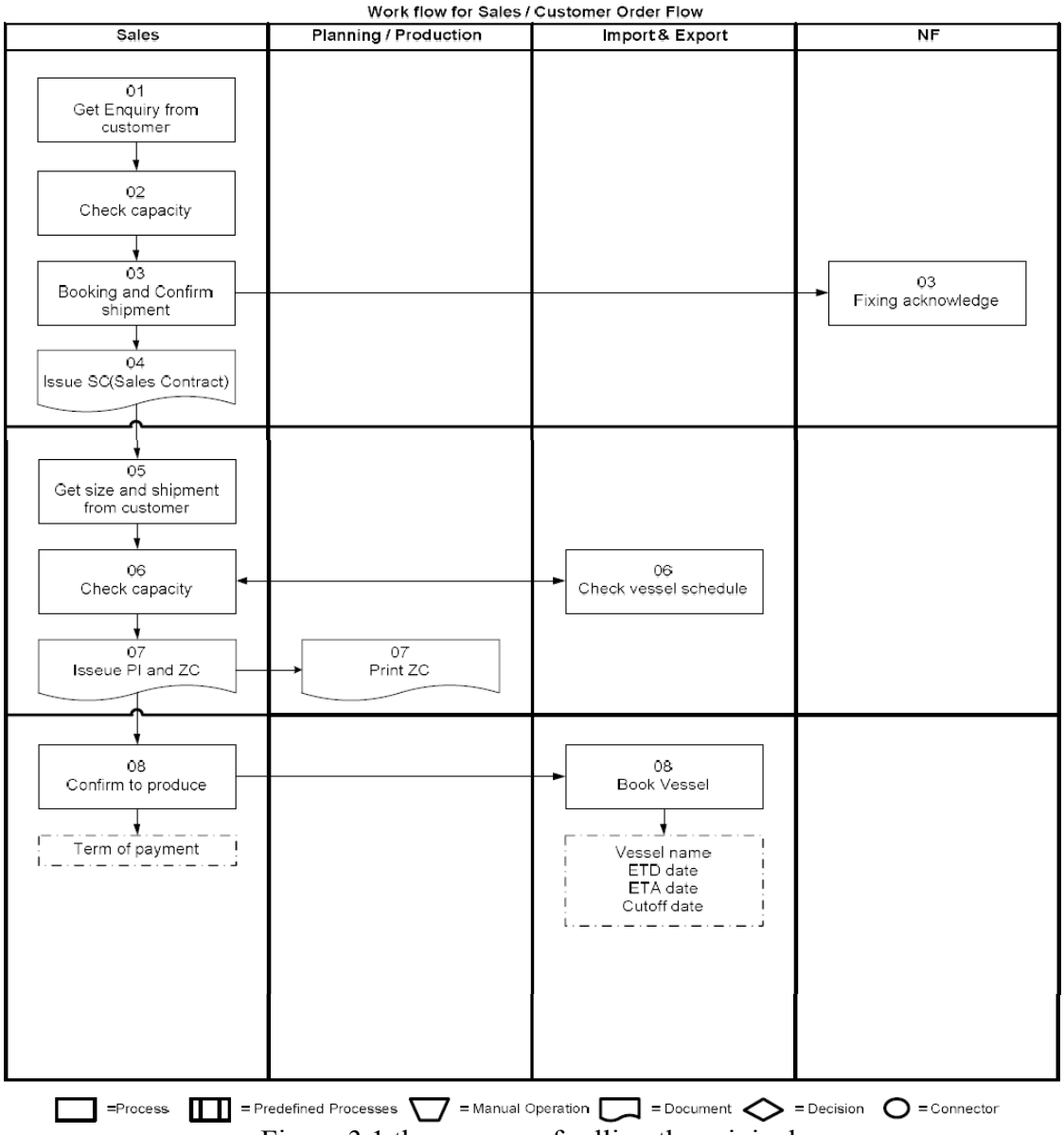

Figure 3.1 the process of selling the original.

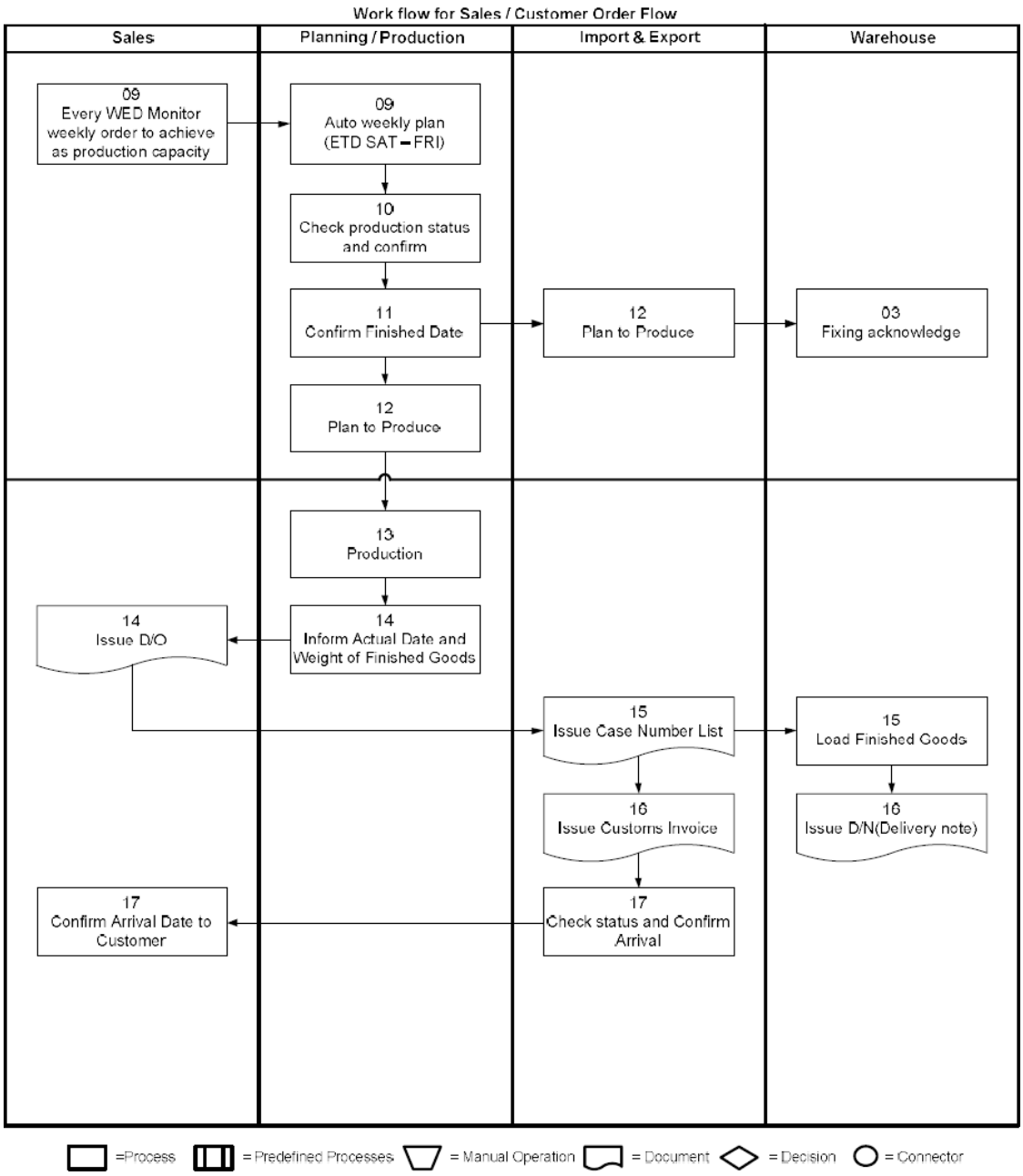

Figure 3.2 the process of selling the original (Cont.)

3.3.1 Get sales enquiry from customer.

3.3.1.1 Check the history of the customer. And record your name, address

3.3.1.2 To determine the stage of orders from customers.

3.3.1.3 Review product specifications before receiving a customer order.

3.3.1.4 Estimates of the number of a customer's needs.

3.3.1.5 In order to meet customer needs accurately.

3.3.2 Check capacity in production

3.3.2.1 Check the capacity of the machine. To determine and assess the capacity of the remaining capacity will be produced in the future.

3.3.3 Booking and confirm shipment

3.3.3.1 Review how to deliver the goods.

3.3.3.1.1 Boat

3.3.3.1.2 Plane

3.3.3.1.3 Train

3.3.3.1.4 Car

3.3.3.2 Expected delivery date (Shipment date) by order on hand that is how much of that month. Or impossible to produce, how much compared with the projected demand of the clients enquiry.

3.3.3.3 Agency for feedstock (NF) RESERVATIONS / purchase used to produce finished products from enquiry equal to the client.

3.3.3.4 Shipment date delivery date will be confirmed and stated clearly again after receiving the detail of the finished product to the customer.

3.3.4 Issue SC (Sales contract)

3.3.4.1 Create a document by number of SC scrap booking.

3.3.4.2 Check for accuracy before submission SC to customers.

3.3.4.2.1 Keep the original

3.3.4.2.2 Email or Fax to customers.

3.3.4.2.3 Copy to Import and Export department.

3.3.5 Get size and shipment from customer

3.3.5.1 Sales Person Tracking Size (Details finished goods) from the client in writing.

3.3.5.2 Sales Person would determine the exact date of its customers.

3.3.5.3 To bring out the Performa Invoice (PI) Shipment 15 days prior to the deadline.

3.3.6 Check capacity and check vessel schedule.

3.3.6.1 Sales Person checked capacity again to determine the date of delivery (Shipment date).

3.3.6.2 Import and Export department to check the schedule for delivery to plan the transport of goods to customers.

3.3.7 Documentation PI and ZC for shipment to customers.

3.3.7.1 Sales Person Sales Order prepared to terms of payment (Payment term) and specify an exact delivery date (Shipment date) into the PI (Performa Invoice) and ZC (Size Confirmation) for shipment to customers.

3.3.7.1 PI (Performa Invoice)

3.3.7.1.1 Keep the original

3.3.7.1.2 Copy submitted Import and Export department.

3.3.7.2 ZC (Size Confirmation)

3.3.7.2.1 Keep the original

3.3.7.2.2 Send a copy to the Planning department.

3.3.7.3 Planning / production department provided equipment machinery and molds for production.

3.3.8 Confirm to produce

3.3.8.1 When all the information is correct sales Person to confirm with all agencies to confirm the customer's order.

3.3.8.2 Planning and Production department manufacturing operations.

3.3.8.3 Import and Export department to book a boat to transport goods. You must have the following information.

3.3.8.3.1 Vessel name

3.3.8.3.2 ETD (Estimated Time of Departure) estimates that exports.

3.3.8.3.3 ETA (Estimated Time of Arrival) estimates that the product delivered.

3.3.8.3.4 Cutoff date

3.3.9 Monitoring

3.3.9.1 Sale Persons to monitor every Wednesday in the week, but that is how much the Sales Order is confirmed by the Customer to Sales Order sent to the Planning Department for the planned date of delivery. And followed from the Sales Order has been verified.

3.3.9.2 Planning and Production department during production tracking and notification to the relevant departments (Sales person, Import and Export department, Warehouse).

3.3.9.3 Import and Export department to confirm the exact date of delivery to the carrier freight (Loading date) and to the shipping agency Warehouse to know to prepare the goods leave the warehouse to transport to the freight service.

3.3.10 Plan to produce

3.3.10.1 Planning and Production department plans to produce products to meet the targets set.

3.3.11 Produce

3.3.11.1 Planning and Production department to produce the products according to the plan. After Finished Goods Report to the Sales person to finish. And information of the product for Sales person to put this information to use in the preparation of DO (Delivery order).

3.3.11.2 Sales person creating DO (Delivery Order).

3.3.12 Issue case number list

3.3.12.1 Sales person to DO to Import and Export department for the specific case number list (Batch number).

3.3.12.2 Warehouse Open loaded into trucks, and cut stock items leave the warehouse and type DN (Delivery Note).

3.3.12.3 Import and Export to issue invoices shipments with freight.

3.3.12.4 Import and Export Track and confirm the date of delivery to the customer with service providers and freight indicators Sales person.

3.3.12.5 Sales person status information and confirmation of delivery to the customer.

3.4 Problem from process of sales (As-Is)

3.4.1 Lack of reliable delivery of data between agencies.

The transplant original work but before embarking on it the next step is will be checking back together several times. I do not trust the information they send to each other that they are accurate or not.

3.4.2 The process of redundant work.

The original work the process works similar. In several steps the data used is the same data set only the separate steps.

3.4.3 Lack of unity of information.

Since the breakup of the data in the various departments and with different causes data redundancy and to the department information sharing is possible which hinders the joint coordination between departments. And keep each department uses its own ability to solve problems creatively and management cannot happen.

3.4.4 Lack of quick response.

Information systems of the past The information in each division will be processed Batch Processing was like once a month, etc. make the information of each

department will be deployed in the organization's overall delays. Therefore, management can analyze the data at that time (real time) to make decisions in a timely manner (timely decision) is possible and happens to be difficult.

3.4.5 Lack of integration of the system.

The original work was created in order to solve the problem, but not separate entities. Our focus is to save energy. The machinery and equipment and to automate as much as possible. The result is that the data generated will vary according to the student's department and individuality to each delays in the flow or connection of data between systems. This can be a barrier preventing the build systems faster.

3.4.6 Rigor of the original system.

Most legacy information systems to develop their own in-house by the IT system are composed of a large program. Lack the flexibility to amend and administrators. It is difficult to improve the administration to deal with changes that happen quickly.

3.5 Guidelines to solve problems

The analysis of business processes, the traditional point of sale system. We retrospectively reviewed the various problems to analyze and find solutions. And decided to dismantle improve business processes by using SAP Best Practice (Make to Order) to improve and streamline the sales process.

The update process Prepared for quick optimization of work and to the satisfaction of the customer. And this is an incentive to keep customers satisfied with a system that is reliable. And service quality even more. The process of sales activity of SAP Best Practice (Make to Order) can refer to Figure 3.3 shows the process of selling SAP Best Practice (Make to Order).

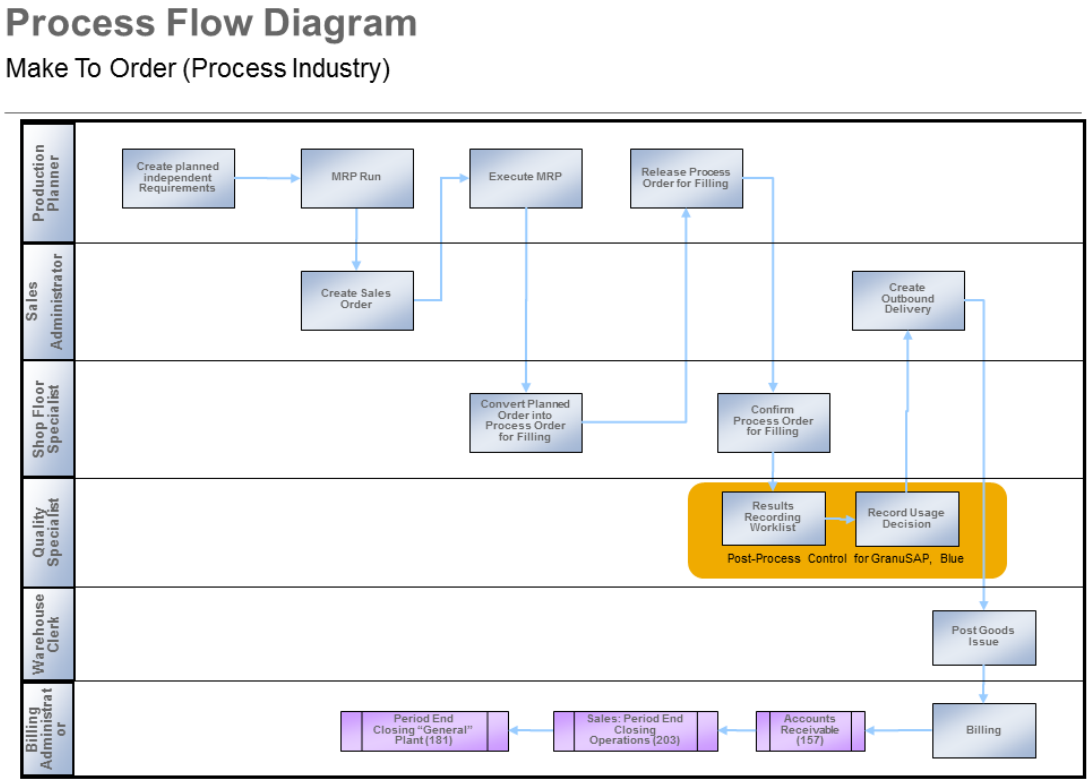

Figure 3.3 shows the process of selling SAP Best Practice (Make to Order).

3.6 GAP Analysis

Comparison and analysis of existing processes with SAP Best practice (Make to Order) to determine the vulnerability of the system compared with SAP systems to improve work processes, new perforations to fix the old system. Increase a performance quick and easy and meet the needs the business effectively is summarized in the table below.

Table 3.1 GAP Analysis

No.	Description	As-Is	To-Be
01	Get sales enquiry from customer	• Check the history of the customer. And record your name, address • To determine the stage of orders from customers. • Review product specifications before receiving a customer order. • Get estimates an amount of a customer. • In order to meet customer needs accurately.	• Make sure that the customer information system, customer history is already in the system or not. • If you do not have to be built into the system. • If you have not built into the system. • It reduces the redundancy of the customer.
02	Check capacity in production	• Get estimates from Process 01 to determine the capacity of the machine. To determine and assess the capacity of the remaining capacity will be produced in the future.	Optional: • To determine the capacity of the SAP system by running MRP and Stock requirement list is done or not.
03	Booking and confirm shipment (Create SC) Note: SC = Sales contract	• Create SC documents by specifying the number of items of scrap booking.	• Can be opened as sales contract and confirm the booking and print documents from the sales contract. • If the customer is fixed it fixes a number at the original sales contract does not require a lot of redundancy in the document. The process is a process of verification of raw materials to the finished product does not include the customer

Table 3.1 GAP Analysis (cont.)

No.	Description	As-Is	To-Be
			must inform again later.
03.1	Review delivery method	Delivery method • Vessel • Plane • Train • car	Following As-Is steps
03.2	Estimate Shipment date	• Estimated delivery date (Shipment date) by order on hand in it, that is how much. Or impossible to produce, how much Compare to estimates from the enquiry clients.	• The estimated date of delivery (Shipment date) with the Process 02. • Or wait estimate after the goods to the customer. * Shipment date will be confirmed and stated clearly again. After receiving the detail of the finished product to the customer.
03.3	Reservation and buy material	• Nonferrous (NF) reservation / purchase. Used to produce finished products from enquiry equal to the clients.	• To create PR and PO turn makes purchases of raw materials. An amount equal to the Enquiry from customers.
04	Checking SC	• Check for accuracy before submission SC to customers. o Keep the original o Email or Fax to customers o Copy and send to Import and Export department.	• Printing SC from sales contract for customers only. • Email or Fax to customers. * If the student's Social Responsibility through SAP want to display information from the system does not need to print a document.
05	Check capacity and check vessel schedule	• Sales Person checked capacity again. To determine the date of delivery (Shipment date).	Optional: • To determine the capacity of the SAP system by running MRP and Stock requirement

Table 3.1 GAP Analysis (cont.)

No.	Description	As-Is	To-Be
		• Import and Export department to check the schedule for delivery. To plan freight service to customers.	list is done or not. • To check vessel schedule must also carry out the steps of the AS-IS.
06	Get size and shipment from customer Issue PI and ZC and print PI & ZC	• Sales Person Request Tracker Size (Details finished goods) from the customer in writing. • Sales Person would determine the exact date of delivery to the customer. • To bring out the Performa Invoice (PI) Shipment 15 days prior to the deadline. • Sales Person Sales Order prepared to terms of payment (Payment term) and specify an exact delivery date (Shipment date). • Document PI (Performa Invoice) and ZC (Size Confirmation). • PI (Performa Invoice) o Keep the original o Copy submitted Import Export department.	• Create Sales order in SAP. • Print documents from Sales order in the form of PI (Performa Invoice) sent to customers and send them to Import & Export department used to walk the export formalities. • No documentation ZC (Size Confirmation) for the PI, size, price, product information is already complete. Planning run MRP to use information from the Sales order to use in production planning. No need for document exchange. After a sales order in the information systems used in production will send it to the auto manufacturers.

Table 3.1 GAP Analysis (cont.)

No.	Description	As-Is	To-Be
		• ZC (Size Confirmation) o Keep the original o Send a copy to the Planning department • Planning / production department prepare equipment. And molds for the production	
07	Confirm to produce	• When all the information is correct sales Person to confirm with all agencies to confirm the customer's order.	• Does not require this step. If a customer has to modify anything Sales person to fix the sales order and after editing, just let the sales person with MRP run new there.
08.1	Every WED Monitor weekly order to achieve as production capacity		• Tracking timely reporting of SAP Standard Production Planning.
08.2	Auto weekly plan (ETD SAT – FRI)		• Does not require this step because we can count on to produce finished goods reported SAP Standard of Production Planning.
09	Check production status and confirm		• Does not require this step because we can count on to produce finished goods reported SAP Standard of Production Planning.
10	Confirm Finished Date	• Inform the date for the finished products Import & Export department.	• Be aware of finished goods are reported SAP Standard of Production Planning.
11	Plan to produce	• Planning / production department plans to produce products to meet the target set Manufacturing operations	• After the MRP run from sales order goes into production planning. And manufacturing operations with SAP.

Table 3.1 GAP Analysis (cont.)

No.	Description	As-Is	To-Be
12	Production	• Planning / production department to produce the products according to the plan. After Finished Goods Report to the Sales person to finish. And information of the product for Sales person to put this information to use in the preparation of DO (Delivery order).	• After the MRP run from sales order goes into production planning. And manufacturing operations with SAP. • When finished, it will produce an inventory of the items to be sold.
13	Inform Actual Date and Weight of Finished Goods	• Sales person informed them of the product. And amount to be delivered to the customer.	• When finished, it will produce an inventory of the items to be sold to sales person can inspect the reports Stock.
13.1	Issue DO	• Sales person taken in the preparation of Process 10.1 DO (Delivery order).	• Create a Delivery Order through the SAP system using the issues that have been received from the manufacturer.
14	Issue case number list	• Sales to DO to Import & Export department for use in identifying case number list (Batch number). • Warehouse Open loaded into trucks, and cut stock items leave the warehouse and type DN (Delivery Note).	• Takes Delivery Order to make picking confirm to identify Batch no. To be exported. • When a product up truck. Product will be cut out of the library (Post goods issue).
14	Issue Customs Invoice	• Import & Export department to issue a tax invoice. Shipments with freight.	• Takes Delivery Order to Post goods issue, then the tax invoice.
15	Check status and Confirm Arrival Date to Customer	• Import & Export department Track and insisted on delivering goods to customers with freight service	• We need to follow the steps of the AS-IS.

Table 3.1 GAP Analysis (cont.)

No.	Description	As-Is	To-Be
		and prompt Sales. Sales status information and confirmation of delivery to	

3.7 Design to new sales process (To-Be)

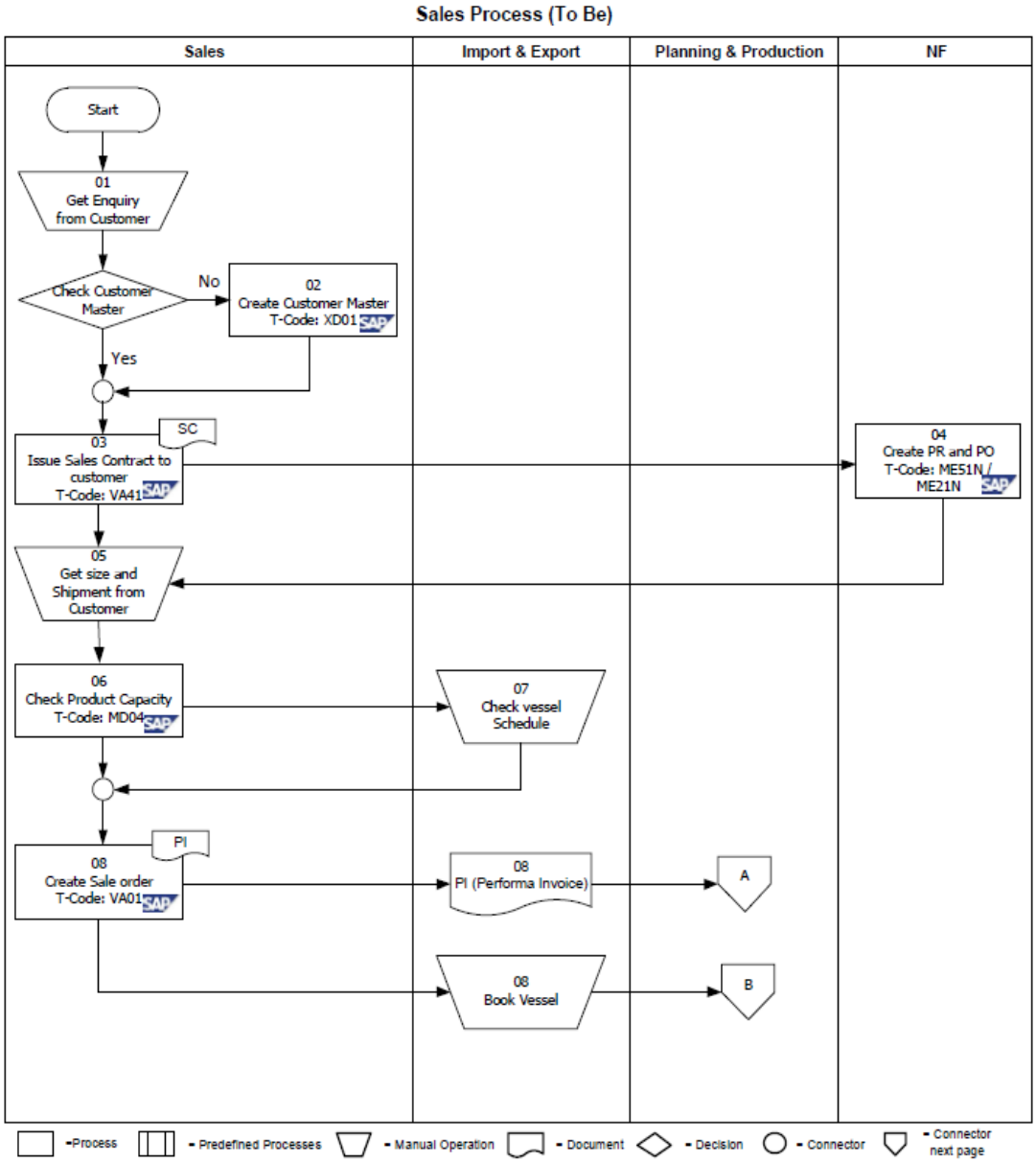

Figure 3.4 Sales Process with SAP (To-Be)

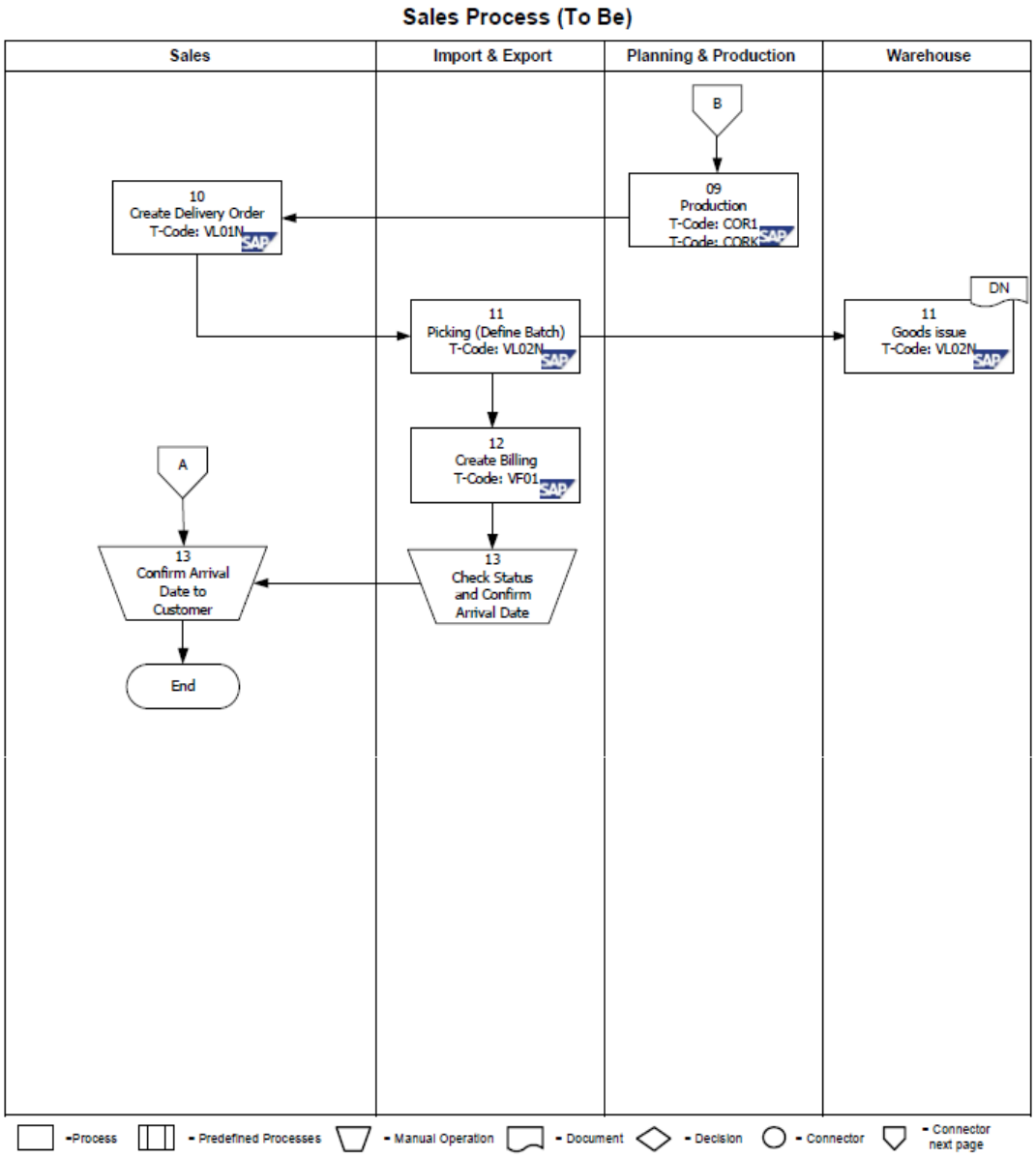

Figure 3.4 Sales Process with SAP (To-Be) (Cont.)

3.8 Evaluation form

The research was conducted to evaluate the design process for the new SAP system to measure the improvement process for the possibility of bringing sales processes with SAP system applied in the development of SAP a case study of the sales process of industrial production of copper. The evaluation form used in this study is the evaluation of closed, open-ended questionnaire was divided into three parts.

3.8.1. Part 1

Part 1 is mostly related to the basis of those estimates include pest for age, education and work experience. Responsible Agency And affiliations which characterize the response rate is multiple choice.

3.8.2. Part 2

Part 2 is primarily concerned with the assessment process for the SAP system case study industrial production of copper divided into five rating levels.

5	represent	most or very good.
4	represent	more or better
3	represent	moderate or fair
2	represent	less or inferior.
1	represent	minimal or need improvement.

Conversion rate is the average of the following options.

5	which had an average of	4.51 to 5.00.
4	which had an average of	3.51 to 4.50.
3	which had an average of	2.51 to 3.50.
2	which had an average of	1.51 to 2.50.
1	which had an average of	0.50 to 1.50.

The average of the measures in Part 2 is given by the application. Average math (Arithmetic Mean) is dividing the sum of all the number of all data and standard deviation (Standard Deviation), which can be calculated by the following formula.

The formula for calculating the average

$$\overline{X} = \frac{\sum X}{N}$$

When $\overline{X}$ is average

ΣX is the sum of all the values

N is the number of data

The formula for calculating the standard deviation

$$SD = \sqrt{\frac{\sum(X - \overline{X})^2}{N}}$$

When SD is standard deviation

Σ is the sum of all the values

X is for individual

$\overline{X}$ is average

N is the number of points in the group.

3.8.3. Part 3

Part 3 is part of the recommendation. This behavior is an open question. So that respondents can rate comment or suggestion about the need to improve.

CHAPTER IV
RESULTS

Improving sales processes a case study of industrial production of copper. Prepared for improving the performance of existing systems for more efficient. Solutions in different parts establish the credibility of the organization. All units can be used to extract information from the public. And is linked to the data in the Real time by making improvements to assess the sales process to the SAP system is composed of 3 parts.

Part 1: Overview of the respondents.

Part 2: After evaluating the sales process of case study of industrial production of copper.

Part 3: additional suggestions.

To analyze the sales process can be confident that the new SAP system processes can be applied to the sales process of case study of industrial production of copper. The evaluation of expert SAP system 5 children to get quality information can actually measure the average $\overline{X}$ results of the assessment are as follows.

4.1. Evaluation of SAP export no. 1

Table 4.1 Part 1: General information of SAP export no. 1

SAP Export no. 1	
SEX	Female
AGE	30 – 40 years
Educational background	Bachelor degree
Jobs	SAP Senior Consultant
Experience	8 – 10 years
Company	ISS Consulting Ltd.

Table 4.2 Part 2: After evaluating the sales process of case study of industrial production of copper.

No.	Evaluation Topics	Results	
		Reliability (number)	Reliability (text)
1.	Reduce processes and working time	4	more or better
2.	Reduce data redundancy	5	most or very good
3.	Paper less	5	most or very good
4.	Information system can connect in all department	5	most or very good
5.	Data category	5	most or very good
6.	Respond for user needs	4	more or better
7.	Process flexibility	3	moderate or fair
8.	Real time data	5	most or very good
9.	Easy to understand	4	more or better
10.	The accuracy of the sales process	5	most or very good
11.	Mapping between the original process with SAP.	4	more or better
12.	New process can be used to develop SAP system.	5	most or very good
13.	Optimized to work	5	most or very good
14.	Satisfaction in the whole of sales process.	5	most or very good

Table 4.3 Part 3: Additional suggestions.

Sale process after the update to the SAP system can be used.
Can be applied to real reducing steps to work the same in multiple stages and reduces the data communication in real time at the center.
After sales processes with SAP systems can be improved effectively.
May need to collect more information in greater detail for sale system most prone to do and according to the documents indulgent package of each customer would like to display different information.

4.2. Evaluation of SAP export no. 2

Table 4.4 Part 1: General information of SAP export no. 2

SAP Export no. 2	
SEX	Female
AGE	More than 40 years
Educational background	More than Bachelor degree
Jobs	SAP Project Manager
Experience	More than 10 years
Company	ISS Consulting Ltd.

Table 4.5 Part 2: After evaluating the sales process of case study of industrial production of copper.

No.	**Evaluation Topics**	**Results**	
		Reliability (number)	**Reliability (text)**
1.	Reduce processes and working time	4	more or better
2.	Reduce data redundancy	4	more or better
3.	Paper less	5	most or very good
4.	Information system can connect in all department	4	more or better
5.	Data category	5	most or very good
6.	Respond for user needs	4	more or better
7.	Process flexibility	4	more or better
8.	Real time data	4	more or better
9.	Easy to understand	3	moderate or fair
10.	The accuracy of the sales process	4	more or better
11.	Mapping between the original process with SAP.	5	most or very good
12.	New process can be used to develop SAP system.	5	most or very good
13.	Optimized to work	5	most or very good
14.	Satisfaction in the whole of sales process.	4	more or better

Table 4.6 Part 3: Additional suggestions.

Sale process after the update to the SAP system can be used.
New process of sales can be applied.
After sales processes with SAP systems can be improved effectively.
System improvements necessary to see the needs of other agencies that can support the design process of the agencies involved to all units operating.

4.3. Evaluation of SAP export no. 3

Table 4.7 Part 1: General information of SAP export no. 3

SAP Export no. 3	
SEX	Female
AGE	30 – 40 years
Educational background	Bachelor degree
Jobs	SAP Senior Consultant
Experience	5 – 7 years
Company	ISS Consulting Ltd.

Table 4.8 Part 2: After evaluating the sales process of case study of industrial production of copper.

No.	**Evaluation Topics**	**Results**	
		Reliability (number)	**Reliability (text)**
1.	Reduce processes and working time	4	more or better
2.	Reduce data redundancy	4	more or better
3.	Paper less	4	more or better
4.	Information system can connect in all department	4	more or better
5.	Data category	5	most or very good
6.	Respond for user needs	3	moderate or fair
7.	Process flexibility	3	moderate or fair
8.	Real time data	5	more or better
9.	Easy to understand	4	more or better
10.	The accuracy of the sales process	4	more or better
11.	Mapping between the original process with SAP.	4	more or better
12.	New process can be used to develop SAP system.	4	more or better
13.	Optimized to work	4	more or better
14.	Satisfaction in the whole of sales process.	4	more or better

Table 4.9 Part 3: Additional suggestions.

Sale process after the update to the SAP system can be used.
No suggestion.
After sales processes with SAP systems can be improved effectively.
No suggestion.

4.4. Evaluation of SAP export no. 4

Table 4.10 Part 1: General information of SAP export no. 4

SAP Export no. 4	
SEX	Male
AGE	30 – 40 years
Educational background	More than bachelor degree
Jobs	SAP Senior Consultant
Experience	8 – 10 years
Company	ISS Consulting Ltd.

Table 4.11 Part 2: After evaluating the sales process of case study of industrial production of copper.

No.	**Evaluation Topics**	**Results**	
		Reliability (number)	**Reliability (text)**
1.	Reduce processes and working time	4	more or better
2.	Reduce data redundancy	4	more or better
3.	Paper less	4	more or better
4.	Information system can connect in all department	4	more or better
5.	Data category	4	more or better
6.	Respond for user needs	4	more or better
7.	Process flexibility	4	more or better
8.	Real time data	5	more or better
9.	Easy to understand	5	more or better
10.	The accuracy of the sales process	5	more or better
11.	Mapping between the original process with SAP.	4	more or better
12.	New process can be used to develop SAP system.	5	most or very good
13.	Optimized to work	4	more or better
14.	Satisfaction in the whole of sales process.	4	more or better

Table 4.12 Part 3: Additional suggestions.

Sale process after the update to the SAP system can be used.
No suggestion.
After sales processes with SAP systems can be improved effectively.
No suggestion.

4.5. Evaluation of SAP export no. 5

Table 4.13 Part 1: General information of SAP export no. 5

SAP Export no. 5	
SEX	Female
AGE	30 – 40 years
Educational background	Bachelor degree
Jobs	SAP Senior Consultant
Experience	8 – 10 years
Company	ISS Consulting Ltd.

Table 4.14 Part 2: After evaluating the sales process of case study of industrial production of copper.

No.	**Evaluation Topics**	**Results**	
		Reliability (number)	**Reliability (text)**
1.	Reduce processes and working time	4	more or better
2.	Reduce data redundancy	5	most or very good
3.	Paper less	4	more or better
4.	Information system can connect in all department	4	more or better
5.	Data category	4	more or better
6.	Respond for user needs	4	more or better
7.	Process flexibility	4	more or better
8.	Real time data	5	most or very good
9.	Easy to understand	5	most or very good
10.	The accuracy of the sales process	5	most or very good
11.	Mapping between the original process with SAP.	4	more or better
12.	New process can be used to develop SAP system.	5	most or very good
13.	Optimized to work	5	most or very good
14.	Satisfaction in the whole of sales process.	5	most or very good

Table 4.15 Part 3: Additional suggestions.

Sale process after the update to the SAP system can be used.
The new process of sales can apply to develop SAP.
After sales processes with SAP systems can be improved effectively.
No suggestion.

4.6 Results

Results of the evaluation process after the sale of case study of industrial production of copper. You can find the average of five experts and summarized in the table below.

Table 4.16 Evaluate results by SAP expert

No.	Evaluation Topics	SAP Expert					Results	
		No.1	No.2	No.3	No.4	No.5	$\bar{X}$	SD
1.	Reduce processes and working time	4	4	4	4	4	4.00	0.00
2.	Reduce data redundancy	5	4	4	4	5	4.40	0.49
3.	Paper less	5	5	4	4	4	4.40	0.49
4.	Information system can connect in all department	5	4	4	4	4	4.20	0.40
5.	Data category	5	5	5	4	5	4.80	0.40
6.	Respond for user needs	4	4	3	4	4	3.80	0.40
7.	Process flexibility	3	4	3	4	4	3.60	0.49
8.	Real time data	5	4	5	5	5	4.80	0.40
9.	Easy to understand	4	3	4	5	5	4.20	0.75
10.	The accuracy of the sales process	5	4	4	5	5	4.60	0.49
11.	Mapping between the original process with SAP.	4	5	4	4	4	4.20	0.40
12.	New process can be used to develop SAP system.	5	5	4	5	5	4.80	0.40
13.	Optimized to work	5	5	4	4	5	4.60	0.49
14.	Satisfaction in the whole of sales process.	5	4	4	4	5	4.40	0.49

The table above shows the graph after the assessment of experts in each of the 5 members of the evaluation process after the sale. Case of industrial production of copper can be summarized as follows.

4.6.1 Reduce processes and working time.

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The procedure can reduce the time to work with an average rating of 4 and the standard deviation is 0, which indicates that the 5 experts would you rate the level or better.

4.6.2 To reduce data redundancy

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The ability to reduce duplication of data, which has an average rating of 4.40 and a standard deviation of 0.49, which shows that the 5 experts would you rate the level or better.

4.6.3 Paper less

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The ability to reduce the amount of paperwork to forward information between agencies, which have an average score of 4.40 and a standard deviation of 0.49, which shows that the experts of the 5 you rate remained more or good

4.6.4 Information system can connect in all departments

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. Comprehensive information system And connecting each agency, which has an average rating of 4.20 and a standard deviation of 0.40, which shows that the 5 experts would you rate the level or better.

4.6.5 The categories of information

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The categories of data which has an average rating of 4.80 and a standard deviation of 0.40, which shows that the 5 experts would you rate the level. Most or very good

4.6.6 Respond for user needs

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part ability to meet the needs of users. Which has an average rating of 3.80 and the standard deviation of 0.40, which shows that the 5 experts would you rate the level or better.

4.6.7 Process new flexibility

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The flexibility of the new process which has an average rating of 3.60 and a standard deviation of 0.49, which shows that the 5 experts would you rate the level or better.

4.6.8 Real time data

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. Real time data correlated with mean scores of 4.80 and a standard deviation of 0.40, which shows that the 5 experts would you rate the level. Most or very good

4.6.9 Easy to understand

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The new, easy to understand Which has an average rating of 4.20 and the standard deviation was 0.75, which shows that the 5 experts would you rate the level or better.

4.6.10 The accuracy of the sales process.

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The accuracy of the sales process the average score is 4.60 and the standard deviation is 0.49, which indicates that the 5 experts would you rate the level. Most or very good

4.6.11 Map between the original processed with SAP.

The results obtained from the evaluation of experts, both 5, after the evaluation of the Mapping between the original process to the SAP system, which has an average rating of 4.20 and a standard deviation of 0.40, which show that both experts. 5 How would you rate the level or better.

4.6.12 Use the SAP system actually works.

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. The ability to use a new process to develop the SAP system, which has an average rating of 4.80 and a standard deviation of 0.40, which shows that the 5 experts would you rate the level. Most or very good

4.6.13 Optimized to work

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part and ability to increase the performance. The average score is 4.60 and the standard deviation is 0.49, which indicates that the 5 experts would you rate the level. Most or very good

4.6.14 Satisfaction overview of the sales process

The results obtained from the evaluation of the 5 members of the expert appraisal form on their part. Satisfaction in the whole of the sales process which has an average rating of 4.40 and a standard deviation of 0.49, which shows that the 5 experts would you rate the level or better.

Results of the evaluation of the evaluation process after the sale of case study of the sales process Business, industrial production of copper as a result, the overall assessment is to a greater or better by adopting the values obtained from the assessment in each subject was calculated by determining the average. And the standard deviation

CHAPTER V
DISCUSSION

The study results and conclusions of research to improve sales processes in case study of industrial production of copper as a guide to the problems in the world and developed a new process to resolve the issue and Enhancement and performance in the workplace Cannes A nimble nimbleness The response to business needs appropriately. On the application of technology tools and theories such as improving business processes (Business Process Reengineering), SAP, building to assess the feasibility of the application process for which they were designed new Applied to the development of the SAP system properly meet the sales process of industrial production of copper. Evaluated by experts in the SAP system by directly collecting the data for the research and offer suggestions. Related to this research the details are as follows.

5.1. The results of the evaluation form

5.1.1 Part 1 General information of SAP expert.

Experts on the Evaluation Forms 5 people, mostly women. Which is divided in 4 women and 1 man only by the respondents to estimate the age of majority is approximately 30 - 40, graduated at least a bachelor's degree. And work experience related to the SAP system around 8 - 10 years.

5.1.2 Part 2 Evaluate the sales process of case study of industrial production of copper.

Assessment Methods It has been estimated using the average. And a standard deviation to be concluded in the sales process can be redesigned to be applied in the development of the SAP system has been summarized by the following table.

Table 5.1 Evaluate results by SAP expert

No.	Evaluation Topics	SAP Expert					Results	
		No.1	No.2	No.3	No.4	No.5	$\bar{X}$	SD
1.	Reduce processes and working time	4	4	4	4	4	4.00	0.00
2.	Reduce data redundancy	5	4	4	4	5	4.40	0.49
3.	Paper less	5	5	4	4	4	4.40	0.49
4.	Information system can connect in all department	5	4	4	4	4	4.20	0.40
5.	Data category	5	5	5	4	5	4.80	0.40
6.	Respond for user needs	4	4	3	4	4	3.80	0.40
7.	Process flexibility	3	4	3	4	4	3.60	0.49
8.	Real time data	5	4	5	5	5	4.80	0.40
9.	Easy to understand	4	3	4	5	5	4.20	0.75
10.	The accuracy of the sales process	5	4	4	5	5	4.60	0.49
11.	Mapping between the original process with SAP.	4	5	4	4	4	4.20	0.40
12.	New process can be used to develop SAP system.	5	5	4	5	5	4.80	0.40
13.	Optimized to work	5	5	4	4	5	4.60	0.49
14.	Satisfaction in the whole of sales process.	5	4	4	4	5	4.40	0.49

Based on the assessment, the majority of experts in the SAP system has determined that the process for making a new design that is able to be applied in the development of the SAP system to be in line for the 4:25 is located in the good.

Most experts have suggested that it could be more like the design process for the brothels can be applied to real Reducing steps to work the same in multiple stages and reduces the data communication in real time at the center but may need more storage to be more specific for sale system most prone to do, according to the documents indulgent package. Each customer would like to display different information. The system needs to look at the needs of other agencies that are designed to withstand the work of the agencies involved or not. So that all agencies operating in the same direction.

5.2 Suggestions

Improving sales processes case of industrial production of copper. It has been evaluated by an expert in the SAP system, which is considered a good score are able to agree on the application of the sales process has been improved, which was completed in the development of the SAP system, but in order to be successful as possible should be put in the following sections.

5.2.1 May need to collect more information because most of the sales process to focus area. The only thing the customer Have different information needs. So should add more time to collect information and data integrity of the sales process to meet both internal and external.

5.2.2 Additional storage in the agencies involved. The system improvements necessary to see the needs of other agencies that the design process for this sale support to the functioning of the agencies involved or not to all units operating in the same direction. Not only of the process of collecting data for a single point.

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APPENDIX

แบบประเมิน หลังการปรับปรุงกระบวนการขายกับระบบ SAP

คำชี้แจง แบบสอบถาม

1. **แบบประเมินนี้เป็นส่วนหนึ่งของสารนิพนธ์ ภาควิชา สารสนเทศเพื่อการจัดการ (ITM) มหาวิทยาลัยมหิดล**
2. **แบบประเมินนี้เป็นส่วนหนึ่งของสารนิพนธ์ การปรับปรุงกระบวนการขาย ด้วยระบบ SAP กรณีศึกษาโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง**
3. **แบบประเมินนี้จัดทำเพื่อให้ผู้จัดทำได้มีโอกาสรับทราบผลการดำเนินงานของตนเอง และเพื่อประโยชน์ในการปรับปรุงโครงการให้มีประสิทธิภาพมากขึ้น**
4. **เพื่อความเป็นประโยชน์สูงสุด กรุณาตอบแบบประเมินตามความเป็นจริง**

ผู้จัดทำ

นายกิตติพงษ์ ธรรมรักษาสิทธิ์
นักศึกษาหลักสูตรวิทยาศาสตร์มหาบัณฑิต
สาขาวิชาระบบสารสนเทศเพื่อการจัดการ มหาวิทยาลัยมหิดล

ส่วนที่ 1 ข้อมูลพื้นฐานผู้ทำแบบประเมิน เป็นแบบสอบถามปลายปิด

ส่วนที่ 2 แบบประเมินหลังปรับปรุงกระบวนการขาย กรณีศึกษาโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง เป็นแบบสอบถามปลายปิด

ตารางเกณฑ์การให้คะแนนแบบประเมิน

ระดับการให้คะแนน		คำอธิบาย
คะแนนเชิงปริมาณ	คะแนนเชิงคุณภาพ	
5	ดีมาก	เหมาะสมมากที่สุด
4	ดี	เหมาะสมมากที่
3	ปานกลาง	เหมาะสมปานกลาง
2	น้อย	ต่ำกว่ามาตรฐาน
1	น้อยที่สุด	ต้องปรับปรุง

ส่วนที่ 3 ข้อเสนอแนะเพิ่มเติม เป็นแบบสอบถามปลายเปิด

แบบประเมิน หลังการปรับปรุงกระบวนการขายกับระบบ SAP

คำชี้แจง แบบสอบถาม
1. แบบประเมินนี้เป็นส่วนหนึ่งของสารนิพนธ์ ภาควิชา สารสนเทศเพื่อการจัดการ (ITM) มหาวิทยาลัยมหิดล
2. แบบประเมินนี้เป็นส่วนหนึ่งของสารนิพนธ์ การปรับปรุงกระบวนการขาย ด้วยระบบ SAP กรณีศึกษาโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง
3. แบบประเมินนี้จัดทำเพื่อให้ผู้จัดทำได้มีโอกาสรับทราบผลการดำเนินงานของตนเอง และเพื่อประโยชน์ในการปรับปรุงโครงการให้มีประสิทธิภาพมากขึ้น
4. เพื่อความเป็นประโยชน์สูงสุด กรุณาตอบแบบประเมินตามความเป็นจริง

*จำเป็น

ส่วนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถาม *

1. เพศ

- ชาย
- หญิง

*

2. อายุ

- ต่ำกว่า 20 ปี
- 20-30 ปี
- 30-40 ปี
- 41 ปีขึ้นไป

*

3. วุฒิการศึกษา

- ต่ำกว่าปริญญาตรี
- ปริญญาตรี
- สูงกว่าปริญญาตรี

*

4. ตำแหน่งงาน

- SAP Junior Consultant
- SAP Senior Consultant
- SAP Project Manager

*

5. ประสบการณ์ทำงาน

- 2 - 4 ปี
- 5 - 7 ปี
- 8 - 10 ปี
- 10 ปีขึ้นไป

*

6. หน่วยงานที่สังกัด

ส่วนที่ 2 ประเมินหลังปรับปรุงกระบวนการขาย กรณีศึกษาโรงงานอุตสาหกรรมผลิตสินค้าจากทองแดง

	5 (มากที่สุดหรือดีมาก)	4 (มากหรือดี)	3 (ปานกลางหรือพอใช้)	2 (น้อยหรือต่ำกว่ามาตรฐาน)	1 (น้อยที่สุดหรือต้องปรับปรุงแก้ไข)
1. ลดขั้นตอนและเวลาในการทำงาน					
2. ลดความซ้ำซ้อนของข้อมูล					
3. ลดปริมาณการใช้เอกสารในการส่งต่อข้อมูลระหว่างหน่วยงาน					
4. ระบบสารสนเทศครอบคลุม และเชื่อมโยงกันทุกหน่วยงาน					
5. ความเป็นหมวดหมู่ของข้อมูล					
6. ตอบสนองตามความต้องการของผู้ใช้					
7. การบวนการใหม่มีความยืดหยุ่น					
8. ข้อมูลมีลักษณะแบบ Real Time					
9. กระบวนการขายใหม่เข้าใจง่าย					

10. ความถูกต้องของกระบวนการขาย					
11. การ Mapping ระหว่างกระบวนการเดิมกับระบบ SAP					
12. สามารถใช้พัฒนาระบบ SAP ได้จริง					
13. เพิ่มประสิทธิภาพในการทำงาน					
14. ความพึงพอใจในภาพรวมของกระบวนการขาย					

ส่วนที่ 3 ข้อเสนอแนะเพิ่มเติม

1. กระบวนการขายหลังการปรับปรุงกับระบบ SAP สามารถนำไปใช้ได้จริง หรือไม่

2. ข้อเสนอแนะเพิ่มเติม เพื่อใช้ในการปรับปรุงโครงการ

ส่ง

ห้ามส่งรหัสผ่านใน Google ฟอร์ม

BIOGRAPHY

NAME	Mr. Kittipong Thammaluksasit
DATE OF BIRTH	21 January 1988
PLACE OF BIRTH	Bangkok, Thailand
INSTITUTIONS ATTENDED	Mahidol University, 2006-2009 Bachelor of Management (Management Information System) Mahidol University, 2010-2014 Master of Science (Technology of Information System Management)
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