

**FUNCTION-ORIENTED BUSINESS PROCESS IMPROVEMENT
FRAMEWORK FOR CUSTOMER RELATIONSHIP
MANAGEMENT SECTION IN LARGE SCALE ORGANIZATION**

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Thesis
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ABSTRACT

This research is to improve the performance of the business process in customer relationship management systems (CRM) by the function-oriented model for large-scale organization. The selected case study is a large-scale company with the mission to develop the comprehensive operational management of infrastructure to survey, research, and analyze the problems related under the partnership with government agencies and the private sector. The study focuses on qualitative research of data collection instruments including in-depth interviews and the discussion group.

The findings indicated that the improvement of business processes in CRM, a new model called function-oriented, could help the organizations to respond to the customer satisfaction. Therefore, from the results, function-oriented model could lead to lower costs, better vision of the overall work process, clearer responsibility for division, better deployment of technology, and better recognition in international standards. This framework is approved by CEO and CIO of the organization with the highest satisfaction levels.

**KEY WORDS: FUNCTION-ORIENTED / BUSINESS PROCESS IMPROVEMENT/
CUSTOMER RELATIONSHIP MANAGEMENT / BUSINESS
PROCESS / ACTOR-ORIENTED**

99 pages

กรอบการปรับปรุงกระบวนการทางธุรกิจที่มุ่งเน้นหน้าที่การทำงานสำหรับการบริหารลูกค้าสัมพันธ์ในองค์กรขนาดใหญ่

FUNCTION-ORIENTED BUSINESS PROCESS IMPROVEMENT FRAMEWORK FOR CUSTOMER RELATIONSHIP MANAGEMENT SECTION IN LARGE SCALE ORGANIZATION

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บทคัดย่อ

วัตถุประสงค์ของการวิจัยคือการปรับปรุงประสิทธิภาพของระบบการบริหารลูกค้าสัมพันธ์โดยการปรับปรุงกระบวนการทางธุรกิจที่มุ่งเน้นฟังก์ชันในองค์กรขนาดใหญ่กรณีศึกษาเป็นบริษัทขนาดใหญ่ที่มีภารกิจในการพัฒนาการดำเนินงานที่ครอบคลุมการบริหารจัดการโครงสร้างพื้นฐาน การสำรวจ การวิจัย การวิเคราะห์ปัญหาที่เกี่ยวข้องภายใต้ความร่วมมือกับหน่วยงานภาครัฐและภาคเอกชน การวิจัยนี้เป็นการวิจัยเชิงคุณภาพซึ่งเครื่องมือที่ใช้ในการเก็บข้อมูล เพื่อนำมาวิเคราะห์กระบวนการตัดสินใจ ได้แก่ การสัมภาษณ์เชิงลึกและการสนทนากลุ่ม

ผลการวิจัยชี้ให้เห็นว่า การปรับปรุงกระบวนการทางธุรกิจในการบริหารความสัมพันธ์กับลูกค้าในรูปแบบใหม่ที่เรียกว่าฟังก์ชันที่มุ่งเน้นสามารถช่วยให้องค์กรตอบสนองต่อความพึงพอใจของลูกค้า ซึ่งอาจนำไปสู่การลดค่าใช้จ่าย มองขั้นตอนการทำงานโดยรวม แบ่งความรับผิดชอบชัดเจน สามารถปรับใช้กับเทคโนโลยี และได้รับการยอมรับในมาตรฐานสากล กรอบนี้ได้รับการยืนยันโดยผู้บริหารสูงสุดทางด้านสารสนเทศและผู้บริหารสูงสุดทางด้านการบริหารขององค์กรที่มีระดับความพึงพอใจสูงสุด

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CHAPTER I

INTRODUCTION

1.1 Background and Problem Statement

The most organizations recognize the importance of developing the client relationship management system [1] to help in managing of customer database belonging to the agency for the purpose of management of the project on the basis of the agency's mission. Monitoring and evaluation of the analytical data are reported which makes the accurately accessible information. Therefore, the Customer Relationship Management (CRM) is managed by various involved agencies. For example, the system could be the central system, customer service system, marketing system, sales system, etc.

Planning, CRM nowadays and prospective customers are a necessary and important role in shaping the organization's relationship with its customers including the stability of the customer's service in the long-term. The customer relationship management will fix the issues in the long-term effectively by organizations visualizing the behavior, customer satisfaction, operational guidance in business associated with marketing, sales, and service. The organization (or individual) could improve the revenue and efficiency in their operations. CRM is a business strategy that is needed easily one by individuals within the organization. There are be cooperation in pushing the organization to achieve its goals and customer impression.

In the present, most organizations have a pursuit profit with internal problems. One of those is characterized by a non-profit selling products and services, mostly with government support. Additional factors [2] are given as: making the failure in sales management with the complicated steps in the sale process, building a barrier in the workplace, requiring multiple formats documents, long duration working, personal confusing, and lacking of understanding in job roles and responsibilities. Therefore, Business Process Improvement (BPI), coupled with the development of CRM, is an interest domain to be applied. Additionally, some of CRM driven

organizations are designed for the current process flows based on the pre-defined and established section complied with an organization structure. Each business process is bound with specific section (or department). This designing methodology is costly and inconsistent, because their actor-oriented design may leads to the difficulties in improvements.

Therefore, it has solved the problem development of CRM so that operation was developed and pushing steadily by improving business processes deployed in the CRM. The Business Process Improvement (BPI) [3] is a method of designing the organizational adjustment which continues to increase the operational efficiency by focusing on improving the business taken from the analysis of problem or finding of the real cause. It also minimizes the loss of jobs that do not valuable within the organization and increases yield of products and services. There are some factors involved in this consideration such as the inability of customers' demands response, high operating costs, operational delays, personnel lack of knowledge and expertise, etc. Additionally, there are some external factors, such as high competition, increasing in competitors, changing in economic conditions, new technology, and the requirements of the client and the organization. Thus, improving of business processes is important, because of improvements aim to simplify the procedure for non-critical tasks [2]. The processes with the same formats are combined into a single one, rated by before and after rule with updating methods of working to be more convenient such as a one-stop service. Technology usage assists in operational managing with less time consuming. Saving resources in management, including the personnel, cost, time, and equipment management operates in the changing environments. According to the BPI, there are many agencies using CRM in their works.

This thesis proposes a designing framework for Business Process Improvement (BPI) in CRM by Function-Oriented approach and its evaluation. A case study example is a large-scale company with a mission to develop a comprehensive operational, management of infrastructure to survey, research, problems analysis and successive factors. These missions involve the consultation services, technical support, and training to enhance the skills, knowledge, and the dissemination of information related under the partnership with government agencies and the private sector by considering covers three aspects, including: economic, social, and environmental, for

examples, budget savings, decreasing the operations of government, promoting the interaction between government and citizens.

1.2 Objective

To improve the performance of Business Process in CRM systems by the Function-Oriented BPI in Large-scale Organization.

1.3 Scope of Research

1. Study and review the operational processes according to the structure of the organization related to CRM;
2. Study the actor-oriented in CRM process;
3. Improve the business processes in a CRM by preparation of business process and business flowchart related the marketing, sales, and service with the function-oriented.

1.4 Procedure of Research

1. Study the current status of the organization and requirements using gross to comply with the implementation of the new customer relationship management, namely “As-Is Analysis”, educational technology, and defining the guidelines for implementation;
2. Analyze the business goals and the currently core business process;
3. Provide the suggestions to improve the process;
4. Prepare and present the operational process redesign (To-Be Process) by the mapping process;
5. Monitor the implementation and evaluation.

1.5 Expected Result

1. To reduce paper used and time to approval.
2. To rely CRM of the selected organization on a global standard even more.
3. To clarify the operations to be more convenient, fast, and operationally continuous.
4. To make personnel within the organization having their duties and greater responsibilities.
5. To reduce the redundancy and loss problem of the systems which will not effect on the cost.

CHAPTER II

LITERATURE REVIEW

This research studies the theory and research related to Business process improvement (BPI) in the Customer relationship management (CRM). The descriptions are given as follows:

2.1 Business Process Improvement (BPI)

Business Process Improvement (BPI) [4] is to increase productivity that is absolutely necessary and inevitable in the competitive environment with complexity and intensity. The first phase of BPI would cause a change that may affect the resist, because it will affect the original model. However, the update will cause a new quality in the organization, which is an incentive for executives to find ways to make improvements and to respond to the constant changing environment by making the Business Process Improvement.

BPI is the opportunity to continuously develop to improve the processes. The goal of the work is moving steadily, and is consistent with the possibility of improvement on existing processes for the work quality [5]. The creative ideas use in the improvement process to meet the needs of customers and relentless geared towards the excellence.

BPI is widely accepted that the major trend of future business is to reduce the costs and organizational agility in order to increase the competitiveness of business boundaries in the future, the goal of the organization. The organization must find the unuseful excess, and the wasteland continuously improves business processes.

2.1.1 Objectives of BPI

The role of objectives to improve business processes should be implemented to help respond the role of activity and should be a driving force to improve the process as follows:

- To reduce the deferred product functionality;
- To reduce the rate of product recalls;
- To reduce the customer is total cost of ownership;
- To decrease the cost of maintaining legacy products;
- To complete the empowerment and the needs of clients;
- To focus on quality;
- To process the improvement;
- To improve the existing standards for the better level of credits;
- To improve the daily work better.

In addition, the purpose of the BPI causing the benefits of business is as follows [6] :

- The effectiveness improvement of continuing the organization;
- The stability of the business;
- Benefits or earnings;
- Social responsibility;
- The business growth;
- Participations of member in organization;
- No need to use any special techniques using the common sense of all

employees in the organization, from the top to the bottom.

There are three terms appeared frequently throughout this search objective of BPI:

1. Adaptability: It is streamlined to modify the business processes based on business needs change.

2. Effectiveness: It focus on the delivery of goods, products/services, and the needs of the customers by giving priority to customers.

3. Efficiency: It is to focus on the responsibilities of the personnel working in the organizations, departments, and agencies that are deployed easily in BPI.

2.1.2 Characteristics of BPI

To understand the concept of BPI, the several useful explanations are given as:

- **Input, Activities, and outputs**

To create the effective value for customer, the specification of business processes consists of three basic components:

Input: Information to begin the process. (For example, the cooking process's input the input are a pan, pot, spoon, fork, gas, and other.)

Activities: Change/production is an output. In cook example, activities would include the flavors cooking and food tasting.

Output: Results of various operation are normally called outcomes. In this example, the finished cook.

With the easy-to-understand example of cooking processes, however, the process exiting in all agencies/departments will be a resolution of quite deep and wide.

- **People, Technology, and Information**

Business processes with elements of people, technology, and information bring together to create outputs from looking around the office. Notice that:

–People: The activities are carried out within a process based on inputs received. (e.g., customer requirements which are knowledge, skills, and expertise as the additional inputs).

–Working with technology: The internet, application, and software application technologies facilitate the activities. (For example, customer contacts via e-mail or the client's data connection).

–Information: Data can be stored in the database, storing customer information, and customer service. (For example, enter the work process or export).

BPI, a tool used for all levels of the organization by performing the modification process, is not complex in the department/agencies [7]. Executives must propose the initiative for company to provide a wide range of design in order to improve the performance throughout the organization.

2.1.3 Abilities of BPI

Factors impacting on BPI are involved in analysis of the works procedure as follows.

1. Workflow design

Planning in the ranking process stage of working is given by the start and end between individuals and agencies.

2. Policies and rules

Guidelines and framework are defined to use for the operation/practices to achieve the requirements and rule for the practice/implementation within the organization's management, which the executives and employees at all levels must be used as a conceptual framework for considering the plan, project, and determination of it operates.

3. Human resources

Personnel within organizations, groups, and businesses use the human to take a part in the operations/activities with the goal or the purpose of the duty fulfilled the framework set by the knowledge, skills, and expertise in activities/jobs. The implementation of framework and rules should be used to define the organization, group, and business.

4. Motivations and measures

Giving award of the organizations concerned with how individuals, organizations and processes are measured and related to the impact of assessment, given as: The communication link should be clearly between performance and compensation of employees. Creation of confidence in the evaluation of the performance can identify the worker with the good performance. Removing barriers of work could impact negatively on the support employees (e.g. unnecessary or redundant). Choosing the person that suits the job should be considered for the qualifications of the position and the ability of persons for holding the position. With tracking and developing a work environment, the leader must have the ability and the appropriate management style to motivating employees. Focusing on the returns are not just in terms of money (For example, growth opportunities in job duties, Development in various fields, commendation and compliments to personnel).

5. Information availability and quality

The quality of data is unique by its nature without complex or conflicting data. Access must be ready to use the data, and should be completeness. The value of the data and accuracy without errors must be assessable corresponding to guarantee the available information and communications services for usage on time of need.

6. Information Technology

The storage, processing, and dissemination of information are to support the access of the information, efficiently and quickly. It is overtaken by events, tools, and equipment such as computers, office equipment, telecommunications equipment, and prefab/developed software. For the specific purpose of reusing process of workflow.

7. Facilities

It makes so comfortable to allow the operation completed (e.g., equipment, products, locations, etc.)

In addition, the success of the operation to update the teamwork colleagues have a sense of teamwork to the same goal accepting the differences constructively. Leaders must set a good example of the work that must be initiated stimulus to push the youngsters the importance of work improvement affecting the organization and the responsibility of the individual. To recognize the quality, the importance of improving and the quality of work performed for the award are to be strengthen the morale. Information on the improvement of the results relies on the truth of techniques to analyze/develop/improve the results. The comparisons of events during the transition period between updates are given, as shown in Table 2.1

Table 2.1 Factors and impact of Process Change.

Driving Factors of Process Change	Impact of Process Changes
Customer Service Concerns	Customer Satisfaction
Daily Operations Costs	Customer Needs
Organization Infrastructure	Products and Services
Competitive Challenges in the Marketplace	Cost
Work Process Cycle Time	Document Usage
Employee Productivity	Productivity
Constant Advances in Technology	Time

2.1.4 Benefits of BPI

A well-run BPI will enable us to understand how to work effectively with the needs of client's agencies, and other companies involved. The deployment of strategy may be assisted to improve the capabilities and expertise of the team, which has an impact on the way up as well as saving money, time, and expense of the company. It also includes simplifying of processes, which are unnecessary and expensive. Good planning helps to prevent the problems that should not be happened to reduce the confusion in the workplace, and reduces the usage of resource [8]. Lose minimization with different ways for the work is checked periodically to resolve the problems quickly. The manpower increases/decreases the existing ones. We can use technique to improve business processes to solve the problem [9]. Due to BPI initiatives, the proven benefits include the reduction of errors, increase in agility, increased cross-departmental fusion, increased compliance factors, increase in agility, increase in agility, reduction in costs, reduced elapsed time, reduction of extra human tasks, and the greater human satisfaction.

2.1.5 Procedure of BPI

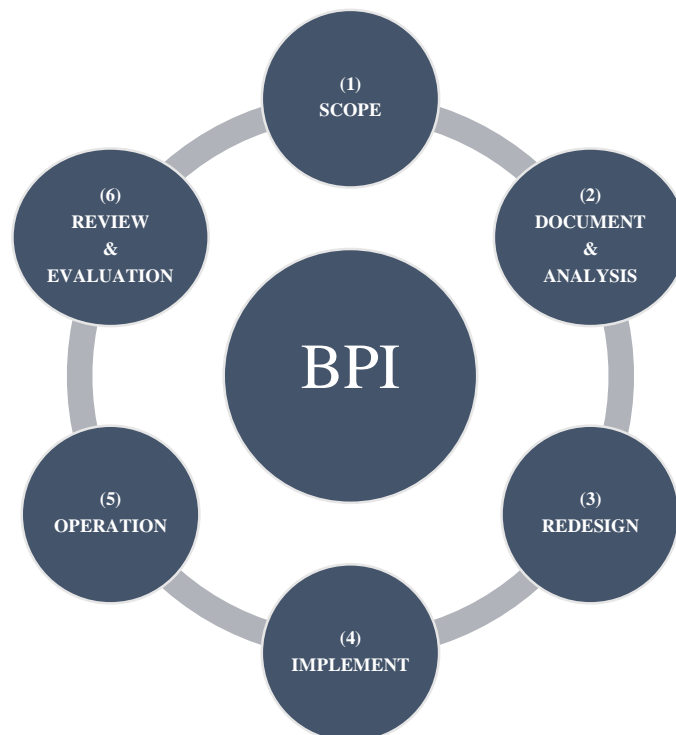


Figure 2.1 Diagram of BPI Procedure.

As shown in Figure 2.1, the general procedure of BPI method [10] could be divided into 6 phases as follows:

Scope Phase – The scope of the project are given as time, costs, and resource estimation. It also includes an understanding of stakeholders and customers. The impact of the improvement process is also needed to be identified. Great scope is able to measure the performance and control projects.

Document and Analyze phase – This phase refers to the document implementation and analysis of current conditions. With disclosure of operation, to improve the process, the measurement should be revised to identify the roles and responsibilities within the organization to understand the availability of organization and ability of customers responding.

Redesign Phase – To get objectives, the new design have to simulate and evaluate for the project management, monitoring, integration entail, and analyzing the terms and costs.

Implement Phase – This phase is to define the scope and the procedure having been approved for compliance with the appropriate procedures to implement the improvement process. The process settings is to establish the measurement criteria to create a process needs. To confirm the measurements with stakeholders, Building plan checks/reviews the process and the deployment process.

Operation Phase – The operate phase represents the day-to-day management of the new/redesigned process [11]. To ensure the operation, the procedures are as follows: steps in the preparation of the audit plan, data collection and establish a monitoring process to monitor, analyze, and finally conclude [12].

Review and Evaluation Phase – This phase is to monitor, and evaluates the period of improvement by identifying and complying the indicators in the assessment against the goals and objectives. This will enable stakeholders and process owners to decide whether to continue/improve further.

2.2 Customer Relationship Management (CRM)

For Customer Relationship Management (CRM), many people mistakenly believe that CRM is a marketing tool. However, in fact, CRM is the management of the

business and marketing program, a part of the activities of the CRM. CRM means to establish and maintain the long-term relationships with its customers through the technology to collect the information in order to increase the efficiency and the improvement of the customer retention for the duration of our business and the creation of value satisfactory to the customer in the long-term.

Customers, the internal customer, is employees in each department/departments within the business combined with its affiliates and external customers who have come into contact with companies, given as: the suppliers, participants of service those who attended the service, and buyers - services.

Educational needs of our customers, the key factor of business, are vital to the development. Therefore, customers is a significant part for businesses to satisfy the customer needs of this increase. The relationship between the customer and the company are needed for efficient, fast, and accurate. CRM can be applied to the work of the organization, and can be used as a tool for controlling the operation. Moreover, it performs the audit effectively.

CRM is a collection of customer information to support the sales, marketing, and communications with customers to achieve the desired objectives, given as: increasing sales of the company, the various promotions matching with customers to reduce the cost of communication marketing, and history search of old customers to utilize the information for the new products development.

To build the relationships with customers, using technology and personnel as principle will contribute to improve the customer service. Collection and analysis of data on spending and behavior of customer make the benefits of the product/service development and the policy management. Final goal of the transition of consumer-to-customer service of CRM is easily implemented. It also reduces the complexity. Functions of CRM systems typically include the sales management, marketing automation system, Customer Support System, and Call Center, because the CRM is a business strategy to bring the various technologies to deploy. Therefore, the care system for effective work will require the cooperation of many parties, for example, information technology department and the designer and the provider of organization's website.

2.2.1 Elements of CRM

The element of CRM consists of three categories, given as:

First component – People are personnel worked within the company, which is the important at first step for CRM driven to succeed by good human resource management processes. Starting from human resource planning needs the quantity and quality, the scheduling, analysis, and classification are recruiting for both internal and external organization. The selection process used by the Board of Directors will be selected to match the culture of the organization, including human resources development. Whether it is training and will be subject to the staff evaluation for the great work with reward systems to motivate. Therefore, human resources should not forget to research in the service of the organization for fact-finding to develop the needs of customers in the future.

Second component – Process refers to the design process of contact with customers to meet their needs effectively. The process should be formed, and plans with the clearly documented procedures, whether it is a responsibility and a measure. This process is conducted the transmission through the agencies involved and tracking the transmission to the various entities that must flow with seamless operation. In addition, the software has to play a role in the CRM process, which is not the focus of operations to sales. However, the importance of customer process and after-sales tracking customers are given.

Third component – Technology in the CRM is not just buying software to install with advanced technology. However, the technology is used to manage the information in customer relationships with the transaction to store the information of clients and expanding the database to generate the forming of relationship with customers, for example, market automation, sales automation, call center, interactive voice response, data warehousing and electronic customer relationship management (e-CRM). The company must have a way to identify the customers who should receive special attention from the data division, given as: the customer data and the Information for customers. The data provided by the customer are as follows:

1. Customer information: It is information of personal details of customers, which is the most collected information. This is because the companies require the information to understand the customer in many facets ways, given as: volume of

purchases, the ability to generate profits, patterns of order, frequency of purchase, and getting of Satisfaction.

2. Information to customers about the products and services: We can recognize the benefits of the customer. These will be offered to customers through various channels of communication channels to make our customers get the most information for decision making.

3. Data provided by the customer's information: It is created by the customer arising from reflection after the customer receives the product or service including complaints from customers, claims of responsibility, insurance, and instructions in quality improvement. Information in this section must be given the special attention, and must be separated, which will contribute to improve the quality, development of new products/services, and the continuous improvement process.

2.2.2 Type of CRM

A type of CRM are generally divided into 7 categories as follows:

1. Analytical CRM

Analytical CRM is to analyze the customer data for the various purposes, including the design and implementation of targeted marketing campaigns and design and campaign in general. e.g., receiving the new customers, the opportunity to propose, recommend, inviting the customers to buy our products, then considering to buy other additional products, purchasing continuity (Cross Selling) or persuading the customer to purchase products with higher value called the purchase increased of the balance (Up Selling) which are analyzed, behavior of consumers to make decisions relating to products and services, pricing, product development, and information system for management (MIS) [13].

2. Campaign Management

Campaign Management CRM, a combination of Operational CRM and Analytical CRM, will include the integration of existing customer base to categorize based on the requirement guidelines, given as Delivering the campaign to customers selected, using various channels (email, phone, mail or SMS) searched to gather data collection, and statistical analysis of campaign including pulling out the response of the customers to analyze future trends.

3. Collaborative CRM

Collaborative CRM is formed to deal with the customers of each department in the organization in a holistic manner, such as sales, marketing and technical support to ensure that all officers of different departments are to share the information gathered about with their customers. Example of obtaining feedback from the customer support, representing the offers and demands of customers, can be useful to improve the quality of service of the overall organization.

4. Consumer Relationship CRM

Consumer Relationship CRM [14] covers aspects of the deal with customers by the agency for contacting the customer relationships. Moreover, the activities of the organization, the representative of the organization, is communication with customers and consumers in the group who wants to remain anonymous internally. The warning can be done on various issues related to the product or the viewpoint of the consumer.

5. Operational CRM

Operational CRM is to support the business processes of the various front offices (sales, marketing, and service) interacted with customers with the typically collected customer, the contact history of customers can be pulled the customer information as necessary. To avoid interfering with inquiries from customer history of contact with these customers to help staff access to sensitive the customer information quickly. The purpose of this section is intended to campaign the management of products/services, operations, marketing, operations to boost sales, and sales.

6. Sales Force Automation (SFA)

Sales Force Automation (SFA) defines to stimulate the sales activities related to management activities (scheduling of sales over the phone or by mail) to find out how to respond in writing report, management of opportunities and assessment, accounting management, and sales for the target. It also includes the organizing and process of each order sales.

7. Sales Intelligence CRM

Sales Intelligence CRM, the similarity of Analytical CRM [15], have the additional option of direct sales tool. To stimulate the sales, thinking about all the time is a matter of cross selling, up selling, opportunity to shuffle the client, the loss of

customers, role in sales, trends of consumer, organizing your client access, and any premiums/benefits of customers received.

2.2.3 Feature of CRM

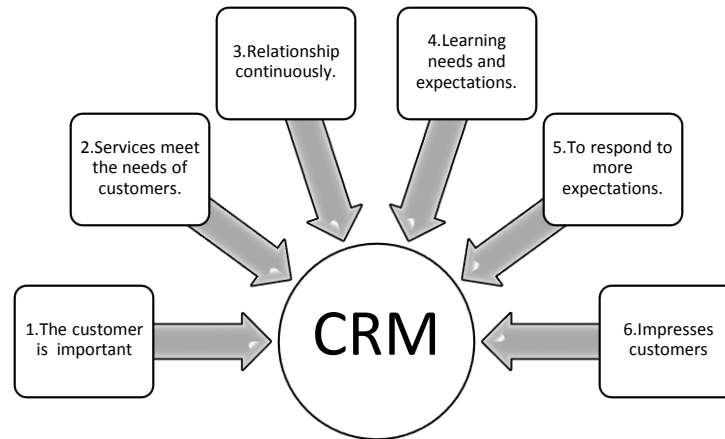


Figure 2.2 Features of CRM.

As demonstrated in Figure 2.2, the key features of a CRM system, delivering the positive customer experience, are usability, flexibility, high performance, and scalability [16]. CRM should be flexible enough to stay in touch with different users, reflects the different requirements in different industries, and should be accessible to the external and internal users. Furthermore, CRM should work over any communication channel, and must integrate other systems to provide a single view for the users [17].

2.2.4 Concepts and Principles

The CRM consists of some concepts including: learning the ongoing customer, retaining the customers, satisfying the demands of customers, offering the fulfill of customer's needs, dealing with different customers, and personally interacting with customers. Building customer relationships increases the value for both clients and organization which is such a compelling strategy [16]. When the CRM is executed properly, the focus on building relationships and brand loyalty is a "win-win" for customers and the organization [18]. This strategy takes a holistic view of customers, and consolidates the information across the organization, regardless of geography, department, function, contact channel, social community, and product line. It usually

focuses on revenue and retention rather than on reducing costs. It also enables the information sharing and the interaction across the organization, and creates the business rules to drive all CRM decisions and automation. Consequently, the effective management of customer relationships is a way of doing business, not just a technology project which is only an enabler [19].

The objectives of the CRM can be expressed as follows [20],[21]:

1. Increasing revenue:

- Identifying the new opportunities;
- Reducing the missed opportunities;
- Reducing the customer defection.

2. Building customer loyalty:

- Improving the customer service;
- Enhancing the appearance of organization.

3. Reducing costs:

- Storing of organization information;
- Reinventing the marketing.

2.2.5 Best Practice of CRM

- Senior management must abide and cooperate closely.
- The setting objectives and goals of the implementation should be assessed.
- The business process for the consistent with purpose should be defined.
- The characteristics of Market segment customer group and competitors should be determined.
- The performance of employee should be evaluated.
- The ability of the organization to modify the work in any part should be assessed.
- Phase analysis and process reengineer cannot be modified to work appropriately.
- Employees engage and perception plan.
- The right technology must be chosen.
- Implementation in business subject will make faster pace.

- The right solution must be determined.
- The implementation experience must be planed.
- The company that sold the system should be implemented.
- The system all the time should be monitored.

2.3 Related research

2.3.1 Techniques for BPI

Analysis techniques of the BPI and Business Process Management (BPM) from a variety of sources are shown in Table 2.2.

Table 2.2 Overview of BPI techniques.

BPI TECHNIQUES	
1. Anti-Solution Brainstorming	19. Other Points of View (OPV)
2. Best-Value Future-State Solution (BVFS)	20. Potential problem analysis (PPA)
3. Brainstorming	21. Problem prevention plan
4. Brain writing	22. Process Cycle Time Reduction
5. Bureaucracy Elimination	23. Process decision program chart
6. Cause and effect analysis	24. Process Simplification
7. Error proofing (pokayoke)	25. Quality function deployment (QFD)
8. Evolutionary operation (EVOP)	26. Redundancy Elimination
9. Failure mode and effect analysis (FMEA)	27. Replenishment Pull System
10. Fast Action Solution Technique (FAST)	28. Robust design (off-line quality control)
11. Generic Pull System	29. Setup Time Reduction
12. Idealizing	30. Should-be Process Map
13. Mind mapping	31. Snowballing
14. Morphological forced connections	32. Taguchi methods
15. Negative Analysis	33. The Importance of Speed
16. Nominal group technique	34. Theory of Constraint (TOC)
17. Objective ranking	35. Total productive maintenance
18. Opportunity cycle	36. Visioning / Imagineering

Analysis techniques of BPI and BPM from a variety of sources above techniques may be available with a comprehensive overview. Both BPI and BPM technique [22] can be used in many cases. The research techniques for improving business processes are 487 methods (e.g., Kaizen, Six Sigma, Fishbone diagram, and so on.) BPI has four steps: 1) The same name by reference based differences are eliminated; 2) Methods, tools, and management practices that do not meet the defined are eliminated; 3) Selection techniques are clearly in the process to update the project between developing projects; and 4) The removal techniques, that do not support the direct update, helps to model the situation to demonstrate the selective techniques for improving the business processes.

The composition of unaffected business processes and any technique of the improved composition of business processes are shown in Table 2.3. The examined elements are given as:

- Activity describes the events occurring in the workflow.
- Organization unit is able to select the objects of process on the screen.
- Resources are people, data, information, materials, machines, tools, energy, asset capital, and time.
- Input and output are the factors and elements that will contribute to drive the overall operating environment.
- Control flow is requirements of data connectivity.
- Material flows are the products, raw materials, shipping, and other flowing along the chain concepts of materials flows.
- Information flows are all data on the flow of information.
- Organizational assignment is the communications by cooperative working of people and groups to achieve the goals of organization.

Table 2.3 Evaluation of BPI techniques.

		Element of a business process									
		Activity	Organizational unit	Resource	Input	Output	Control flow	Information flow	Organizational assignment	Material flow	No elements affected
Success Factor	Cost	(5) (22) (24) (26)	(26)	(24) (26) (27)	(27)	(27)	(22) (24)	(5) (26)	(24) (26)		(2),(10), (15),(18), (23),(34)
	Quality	(29)		(29) (35)			(29)				(11),(18), (23)
	Time	(5) (22) (24) (29) (30)		(24) (29) (35)			(22) (24) (29) (30)	(5)	(24)		(2),(10), (11),(23), (33)
	Flexibility	(29)		(27) (29)	(27)	(27)	(29)				(11)
	Customer	(22) (24) (29) (30)		(24) (27) (29)	(27)	(25) (27)	(22) (24) (29) (30)		(24)		(9) (17) (33)
	Staff			(6)	(6)						

According to Table 2.2, the data of evaluation of BPI techniques, which techniques are not involved in the Table 2.3, are the items of (1), (3), (4), (7), (8), (12), (13), (14), (16), (19), (20), (21), (28), (31), (32), and (36). Which of success factors of improving the remaining 20 techniques can measure the effect suggesting the comprehensive update of all elements of the process completely.

The 20 techniques used are mostly just cause the analysis of problems, getting rid of the problem, identifying the outcome to reduce redundancy. It helps to improve the business processes. However, the research done to indicate the process is a

step to eliminate any problems, and allows the streamlined implementation process. For the chosen techniques, it can help to improve the business processes, and applies these techniques to support the design process of our work depending on the perspective and the appropriateness of use.

2.3.2 Related BPI Research

Abreu et al. [23] presented a case study of maintenance management to realize the BPI in airport. The case target of this study was Maintenance Management Procedures, which was part of the ANA Framework. The research was conducted between March 2011 and March 2012 using the ITIL based five stages of improvement process, as shown in Table 2.4.

Table 2.4 Summary of the ITIL based five stages for improvement process (a).

<p>Service strategy</p>	<p>State the purpose or goal of service, and add an indicator to offer the objective decision support to managers and technical studies of maintenance. The following service strategies for its business operation, given as: change management, configuration management, configuration item, knowledge management, and resource management. Maintenance management procedure is as follows: (Processes + Indicators > Data Analysis > Improvement Actions).</p>
<p>Service design</p>	<p>This stage begins with the identification of service strategies, and ends with a service solution in order to meet organizational requirements. Design phase was given as: (CMMS Analysis > KPI calculation > Report design > Outputs Analysis > Improvement Actions).</p>
<p>Service transition</p>	<p>This transition stage, where settings of the design stage have been applied, there was some care, not only with the existing processes but also with the operational impact of the maintenance management procedure.</p>

Table 2.4 Summary of the ITIL based five stages for improvement process (b)

Service operations	Operations of the maintenance management procedure would use the principles PDCA cycle (Plan, Do, Check, Act)
Continual service improvement	Monitor the correct reports implementation; Constantly monitor the quality; Inform those involved in maintenance management and Investigate; and Idealize/produce the new metrics

It found that creating value for the organization has always been an implicit goal to achieve. Not only the potential added value of the procedure itself, but also possible BPI, become a tangible reality. We should highlight the importance of ITIL, which identifies a set of best practices, enabling continuous improvement process in a structured and systematic way. All the stages of this framework were important. Nevertheless, service strategy turns out to be crucial, especially for the problem identifying and setting development goals.

Nasution et al. [24] proposed the process improvement solution to the problem of poor-quality information. Process is assessed based on IQ requirements (IQ dimensions) in the perspective of tactical level management, which are mapped according to the literature, benchmarks, case study, and stage of information process flow. Case study in research was the existing information on the preparing process of the consolidated report of position, transaction of loans, and grants. IQ dimensions and attributes, that previously obtained, are used to assess IQ requirements for tactical decision-making level in each process and basis to make the improvement of the information manufacturing process. It found that validation of the BPI was done in two ways, given as: testing the process with the IQ eligibility criteria, and confirming the feasibility of the BPI with multiple parties. Results of the validation showed that the feasibility of the design was to meeting the IQ requirements criteria. Problem-solving of information could be done by improving the process, which is assessed to meet the IQ requirements criteria. IQ requirements are stated in IQ dimensions and attributes. The mapping of the dimensions of IQ was based on the literature, benchmarks, case studies, and model of information flow process in perspective of tactical level of management (middle managers) producing the accuracy, completeness, and timeliness

as the primary dimension. Those can be used by government agencies to assess the information production process.

Tao et al. [25] proposed the framework for BPI based on four dimensional framework in the HT Company which had the corporate communications broadband department, the community users' broadband department, the customer service department, the Construction department, and the Network Management Center to support the broadband services. Looking for the root cause study of the business process analysis and improvement of HT Company by four-dimensional framework, there were given as: 1) Green Dimension: It was to keep the customer relationship to improve their understanding of environment-centered; 2) Layers Dimension: It was the kind of layer model: Broadband services layer- Division layer- Basic process cell layer classifications, the responsibility departments, and the management task of three layers; 3) Logic Dimension: There were four steps in the analysis of logic dimension, given as: the process status quo description, the process problem analysis, the advice of process improvement and the organization structure design; and 4) Process Dimension: There was the BPI which had five functions, given as process plan, process organizes, process control, process turnover and process update. Those could be analyzed from the three layer dimensions by the fishbone diagrams. After analysis of the four dimensions, it was found that the business process with the benefit per improved efficiency and effectiveness for the organization could also reduce the consumption of resources, reduce the waste, and improve the equipment to achieve the sustainable development of society, economy, and environment. It can be cut the service and waiting time, which not only services a green to customers but also protects the environment.

2.3.3 Related CRM Research

Xuan [26] said that the data of customer flow is very important in marketing management since it could mirror many aspects such as customers' interests, locations, and hobbies and so on. Workflow technology was used to make a variety of CRM business be closely linked to obtain the effective integration of marketing, sales, and customer service. All customer-oriented business would be integrated to provide a unified business platform, through continuous improvement and management of enterprise sales, marketing, customer service/support, and other business processes,

which are related to customer's relationships in order to improve the automation in marketing. Furthermore, it also enhances the enterprise's key competitiveness fundamentally. Workflow-based data analysis achieves the automation of CRM business reducing the delays and error, because of transfer of work and improvement of the response speed of business-to-customer. Data analysis can generate the sale task and service task by the knowledge of marketing campaigns, the service feedback can also generate the sale opportunities or marketing task at the same time to build a complete data analysis workflow for making the marketing, sale, and customer service working together.

Beyadar [19] introduced CRM management to enhance marketing activities, selling, and giving services. The concept of CRM is given as: Customer Relationship Management, Necessity, Key Factors Model, The Performance Process of CRM, and the role of CRM. It was demonstrated that the role of CRM to improve the organizations performance. CRM is a united system utilized in planning, timing and controlling the after/before sale activities of the organization. It aims to make customers capable in order to interact with organizations through various tools such as: web, telephone, fax, e-mail, and so on. Customer relationship with organizations are studied and analyzed by means of CRM. In fact, CRM is a process to gather information, and uses them effectively and purposefully. This information can be related to customers, sale effective marketing, market needs and sensitivity. CRM is a strategy of an organization to identify the customers, keep the satisfaction, and make the constant customers. CRM also helps the organizations and maximizes each customer value.

Harej et al. [27] proposed the CRM for business improvement aligned with the appearance of e-Business, the view on business had to change. Many new organizations with new business models, business cases, and new processes were established. An example of new processes was also CRM describing the importance of customers for an organization, and stressed the basics for CRM implementation. Therefore, main phases of successful CRM integration were presented. The key success factors and reasons of CRM implementation failure should also be considered. The effective CRM demands a well-defined strategy that needs a strong support of top management, definition of customer centric vision, processes reengineering, change of work culture, reorganization of the company, integration of new technologies, system

integration, and data management, The four phases were presented, given as: initiation, process definition, introduction, and operation phase. The organization should consider within CRM integration.

From the reviewed research, the study will be used as the case studies of Business Process Improvement (BPI) and Customer Relationship Management (CRM) in terms of methods, concepts, principles, and processes. To achieve commentaries or arguments on different aspects, we found that the research will be presented in new ways to fill the gaps of the problems from the other methods. We would like to propose the ways to improve the work process as follows:

1. Bringing the BPI used to the CRM,
2. Process design,
3. Focusing on Function-oriented BPI Framework,
4. Using an arrow chart to show the continuous process,
5. Focusing on the work rather than discrimination of division.

CHAPTER III

RESEARCH METHODOLOGY

BPI in CRM is used for business improvement in sales, marketing, and services to provide the continuous performance by simplifying the non-critical tasks, and enable to operate in the environment of changes including the saving resource in management (e.g., personnel, cost, time, and equipment). The processes of research are as follows.

3.1 Research Method

The study has to clarify the source, the process review, and the structure of the organization for preparing of the business process and business flowchart. The designed process and the forms must be used in work flow, as shown in Figure 3.1.

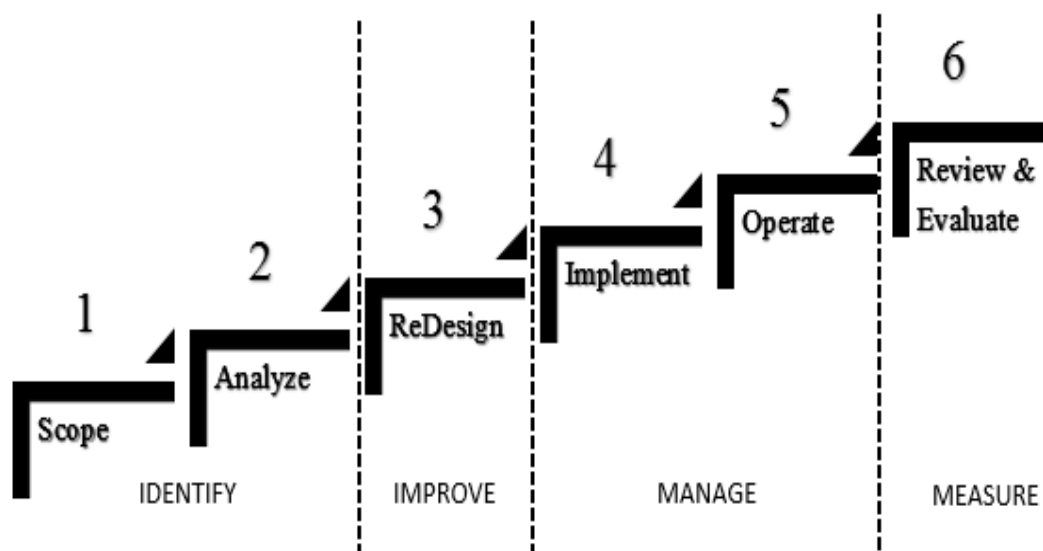


Figure 3.1 Process of Research.

According to the Figure 3.1, the description of the overview process of research in the selected organization in stages of process improvement are given, as shown in Table 3.1.

Table 3.1 Stage of research.

Phase	Description
Scope	<ul style="list-style-type: none"> - Identifying processes for analysis - Operational readiness assessments - Documents and scope - Approving the scope
Document & Analysis	<ul style="list-style-type: none"> - Project Kick-off - Conducting a discovery process - Document and analyze current conditions - Findings the current conditions
Re-design	<ul style="list-style-type: none"> - Identifying the Process Improvement Opportunities - Document Future - Conducting the Readiness Assessment - Presentation of Recommendations - Document Lessons Learned
Implementation	<ul style="list-style-type: none"> - Defining the Implementation Scope and Obtain Approvals - Following the Appropriate Methodologies to Execute Process Improvement Effort - Setting up the Process
Operation	<ul style="list-style-type: none"> - Governing and Managing Process - Executing the Process of Verification Action Plan - Collect and Validating of Data - Analyzing Data - Summarizing the Findings
Review & Evaluation	<ul style="list-style-type: none"> - Result of research conducted on this review - Goals and Objectives - Evaluating the process of maturity - Benchmark with baseline - Identifying the needs of process and change - Preparing the Process improvement plan - The research and communicating of stakeholders plan process

These are four steps to get the majority support reflected in the improvement process:

1. Identify and configure the elements for the specific scope and the analyzing the process. (e.g., to analyze the overall structure and the business process).
2. Improve the business processes by identifying and offering the advice on the specific issues in order to support the planning and design improvements.
3. Clearly define the management with the approved method in order to effectively improve the implementation as the important management.
4. Measure the elements for the continuous improvement to maintain the process.

3.2 Identification

In this process, the overview of the organizational structure is the first thing that needs to be studied to recognize the main activity of organization. Then, we will study the structure of the agency with respect to the CRM by a detailed study of the organization, namely As-Is Analysis.

3.2.1 Analyzing overall organizational structure

Under the new organization structure according to the regulations of the board of organization, the responsibilities and roles of organization are divided and re-distributed into several divisions/departments. In order to rename and reassign the responsibilities for both divisions and positions, the use of laws and office commands are to control the organization.

The comparisons between the organization structures before/after renaming and reassigning are shown in Appendix A. Moreover, both current and improved organization structures are shown in Figures 3.2 and 3.3., respectively.

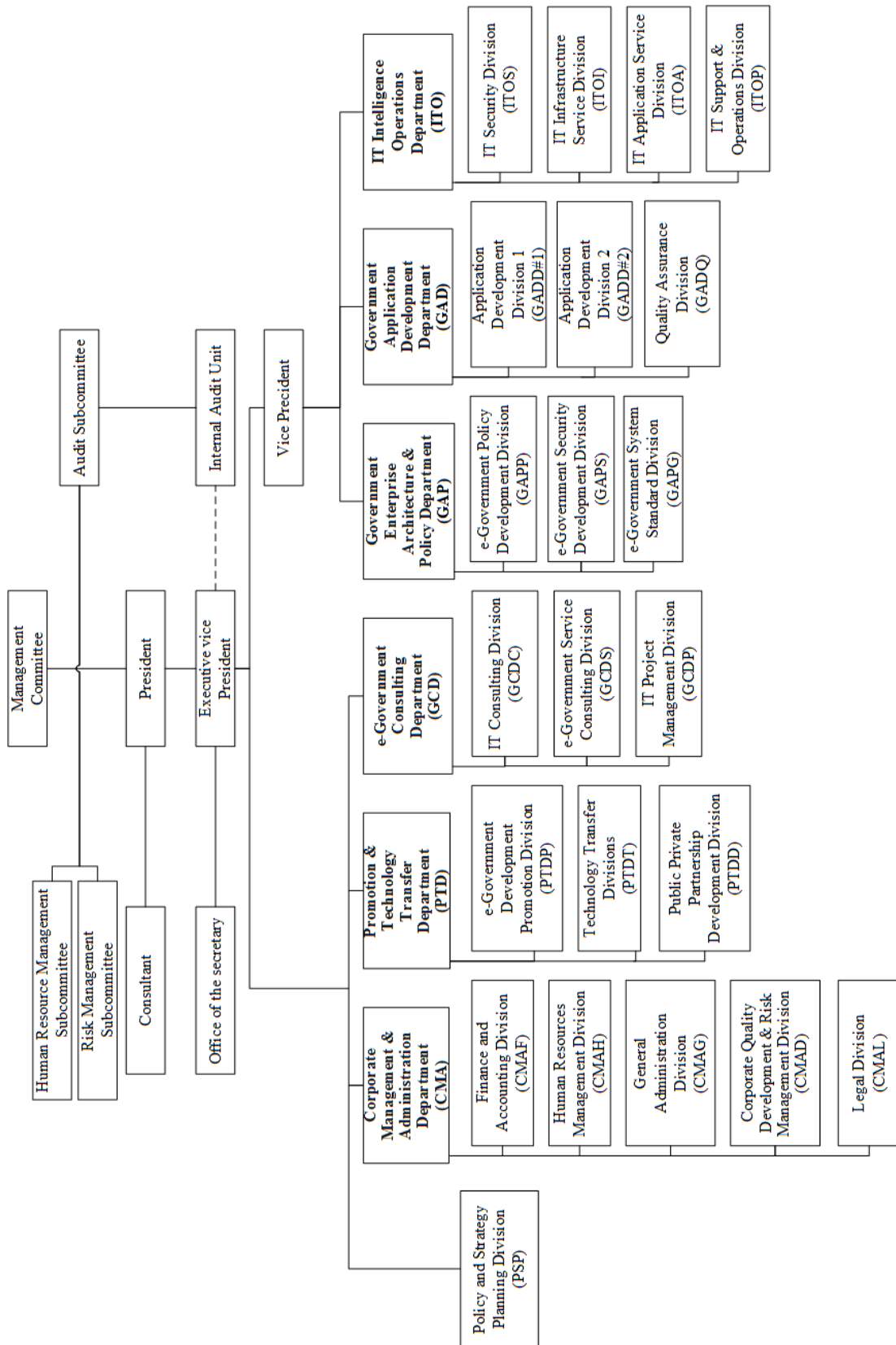


Figure 3.2 Corporate structure before improvement.

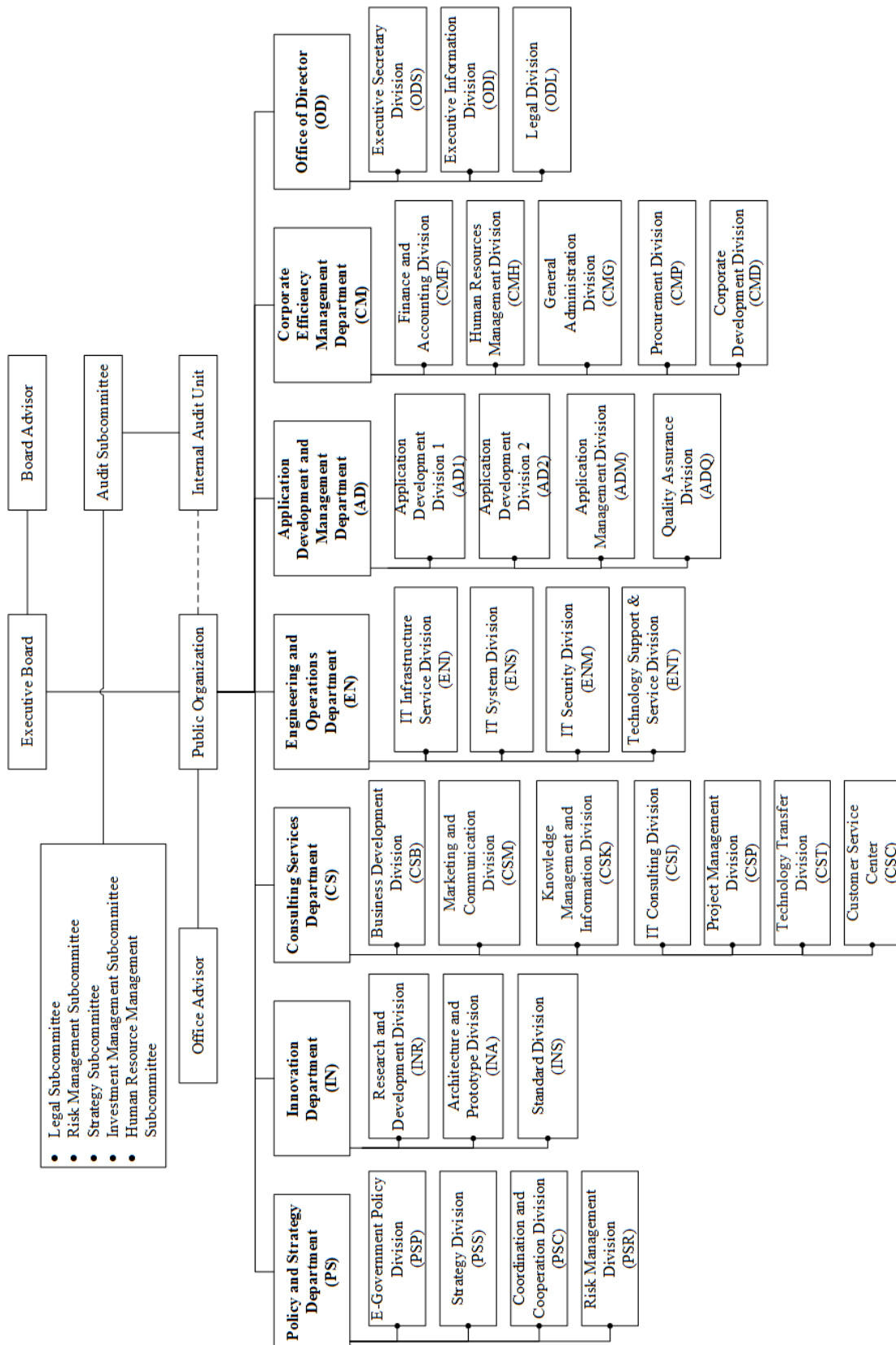


Figure 3.3 The current organizational structure.

3.2.2 Study of Technology on CRM

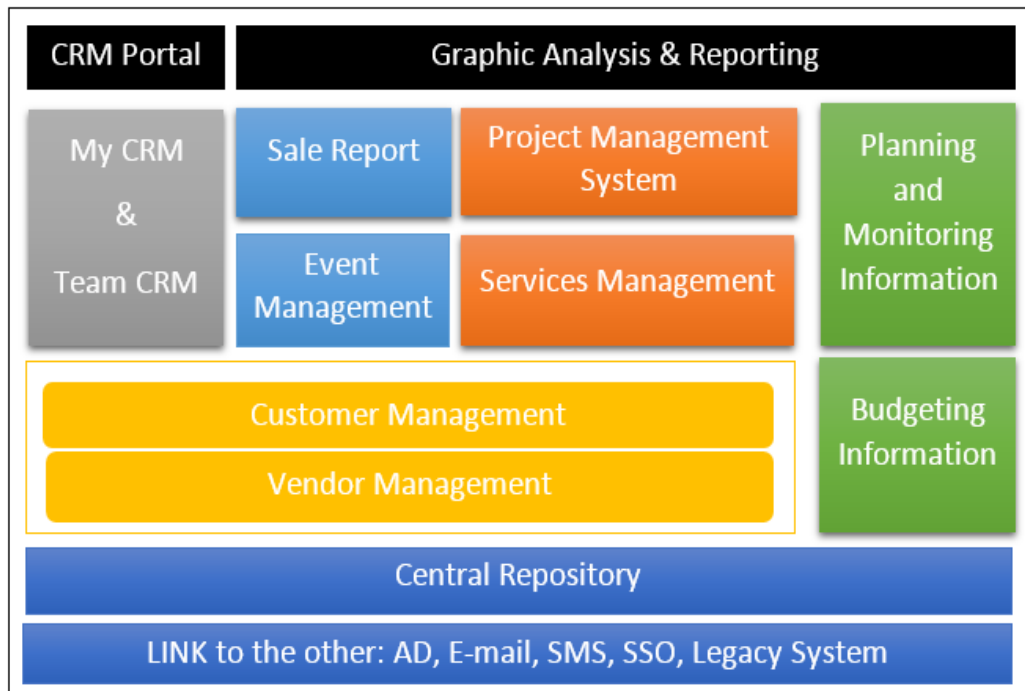


Figure 3.4 CRM System Overview.

As shown in Figure 3.4, it is an overview of the CRM in the selected organization, there are comprehensive detail of the system works as follows:

- Main Screen in login (CRM Portal),
- Personal management (My CRM) and Team Management (Team CRM),
- Customer Management system,
- Services management system (Service management),
- Sales system and Sales tracking (Sale Report),
- Project management system (Project management),
- Company Information management system (Vendor management),
- System Analysis and reporting (Graphic Analysis & Reporting),
- Central storage system (Central Repository),
- Planning and monitoring information,
- Budgeting Information system (Budgeting Information),
- Marketing Management system (Event Management).

3.2.3 Business process map analysis

According to the organization restructuring, it would affect overall organization. For the core business process, it is also related to the marketing, sales, and services. Therefore, it is necessary to re-evaluate the organization after performing the BPI with an improved business process, as shown in Figure 3.5. CRM should improve for the efficiency of organization with the new solution.

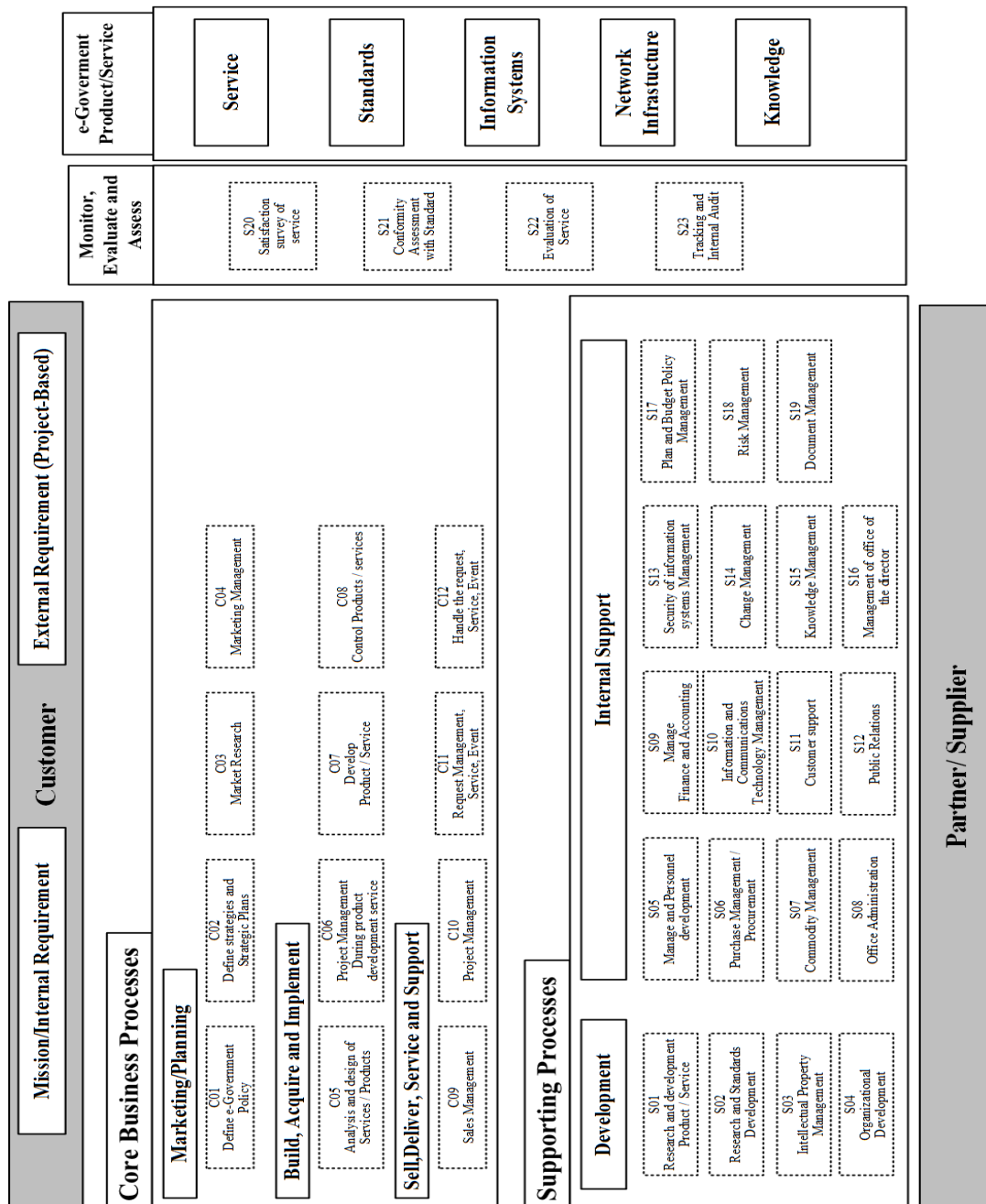


Figure 3.5 Process Map.

Education of the organization's operations and business processes are related to the marketing, sales and service, as shown in Figure 3.6.

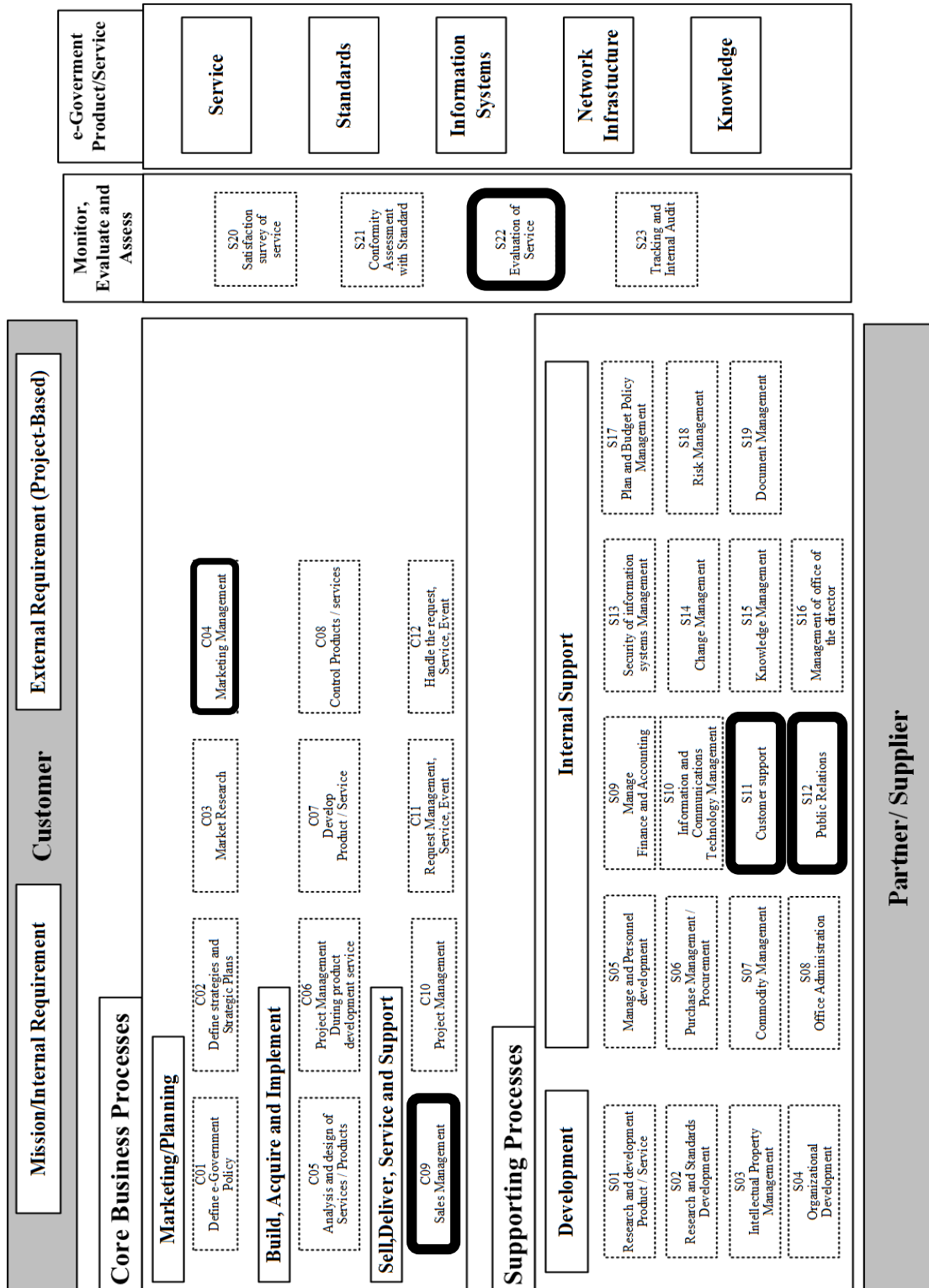


Figure 3.6 Core Processes in Study to CRM.

3.2.4 Processes and workflows before the Re-organization

Issuing in the restructuring process of mapping inconsistencies, the incompleteness diagram is not a continuation of current operations, as shown Figures 3.7 to 3.16. According to the details of the old diagram (actor-oriented), it still has not adjusted to the business processes that are currently available as follows:

- Business Development and Development of Products (services),
- Design Solution,
- Training - client seminar,
- Service satisfaction survey,
- Offering project,
- Offering of services (No charge),
- Offering of services (collect money),
- Project management,
- Change management about customer,
- Contact center.

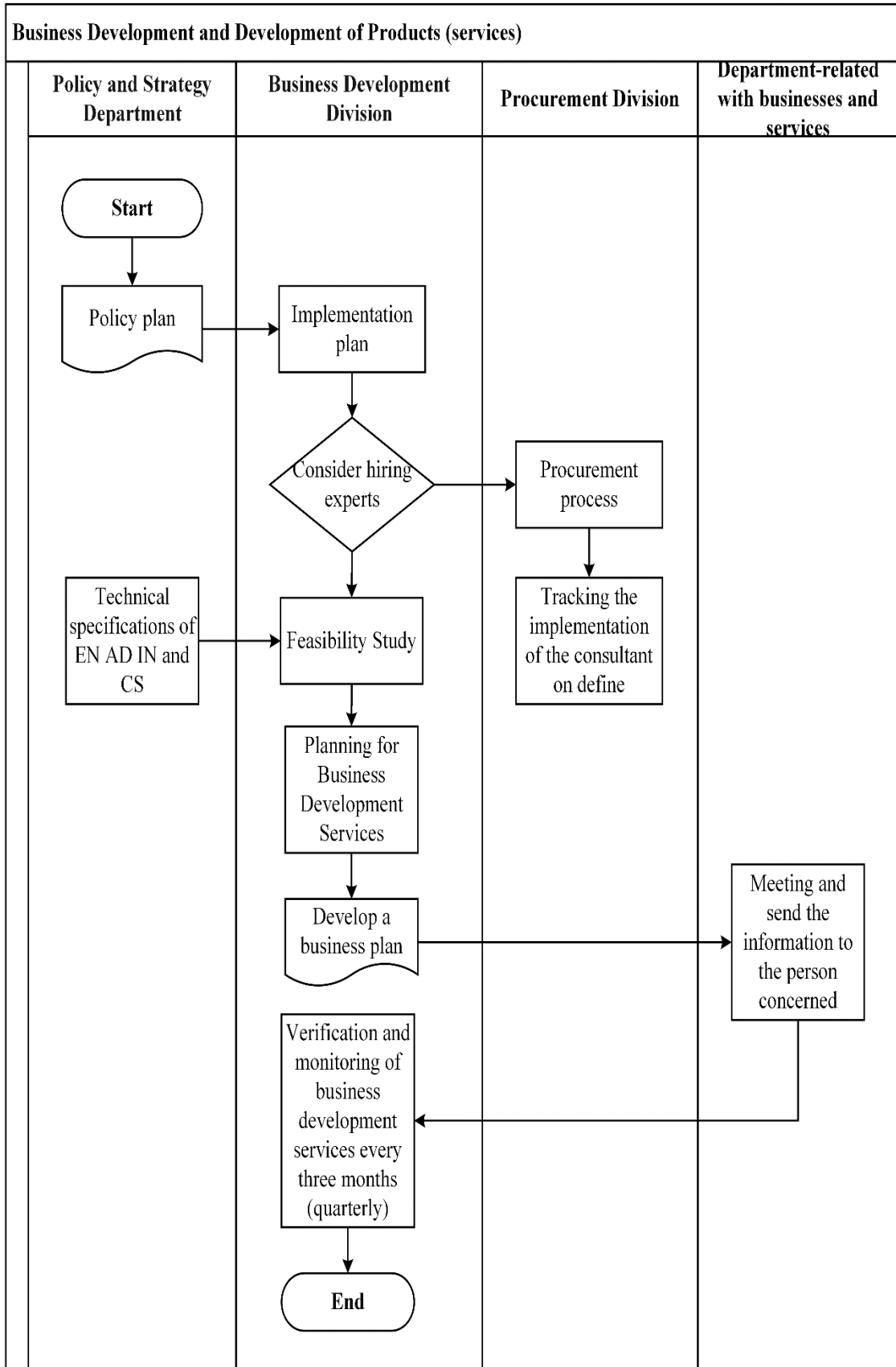


Figure 3.7 Business Development and Development of Products (services) Diagram.

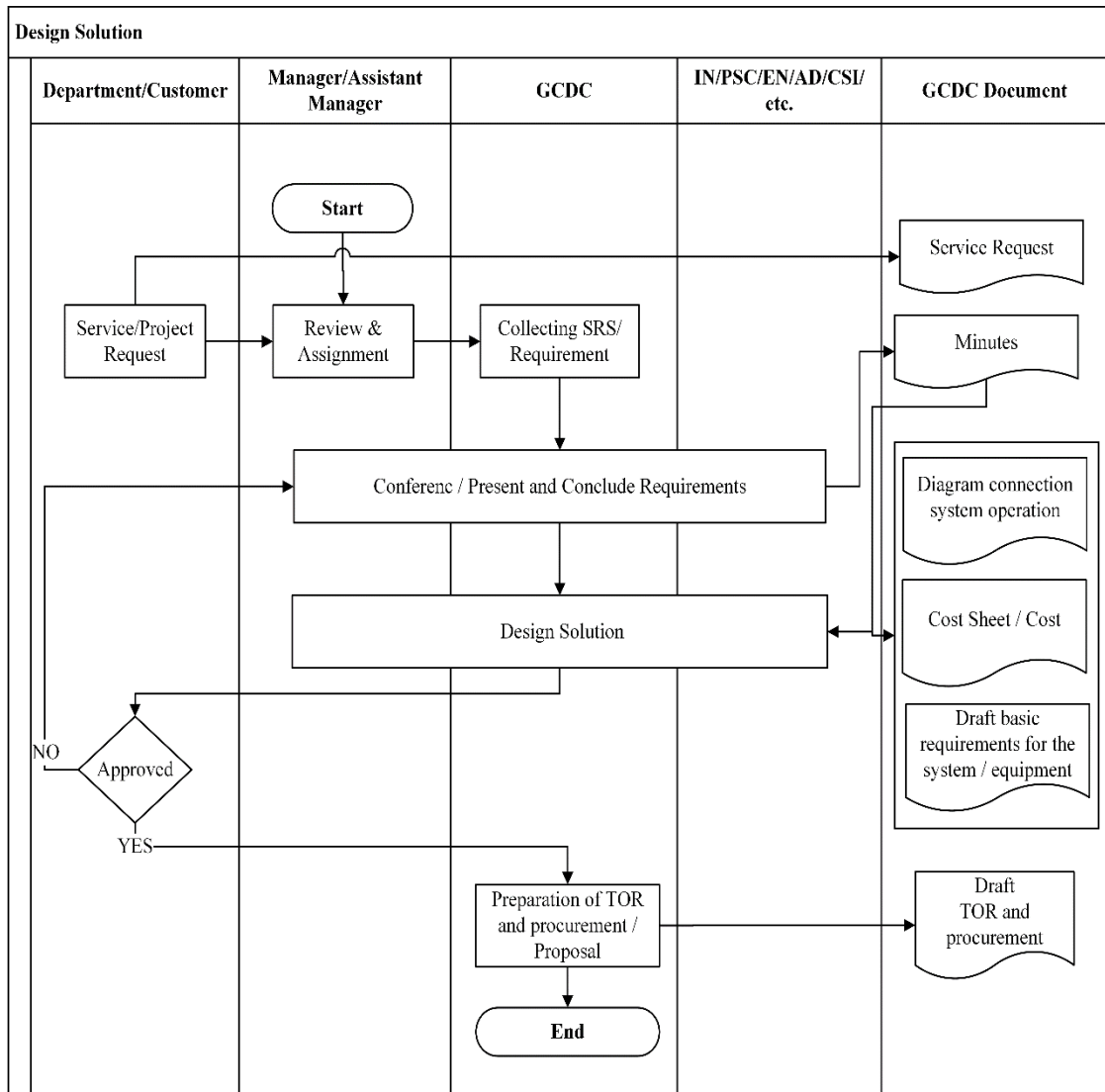


Figure 3.8 The Designed Solution Diagram.

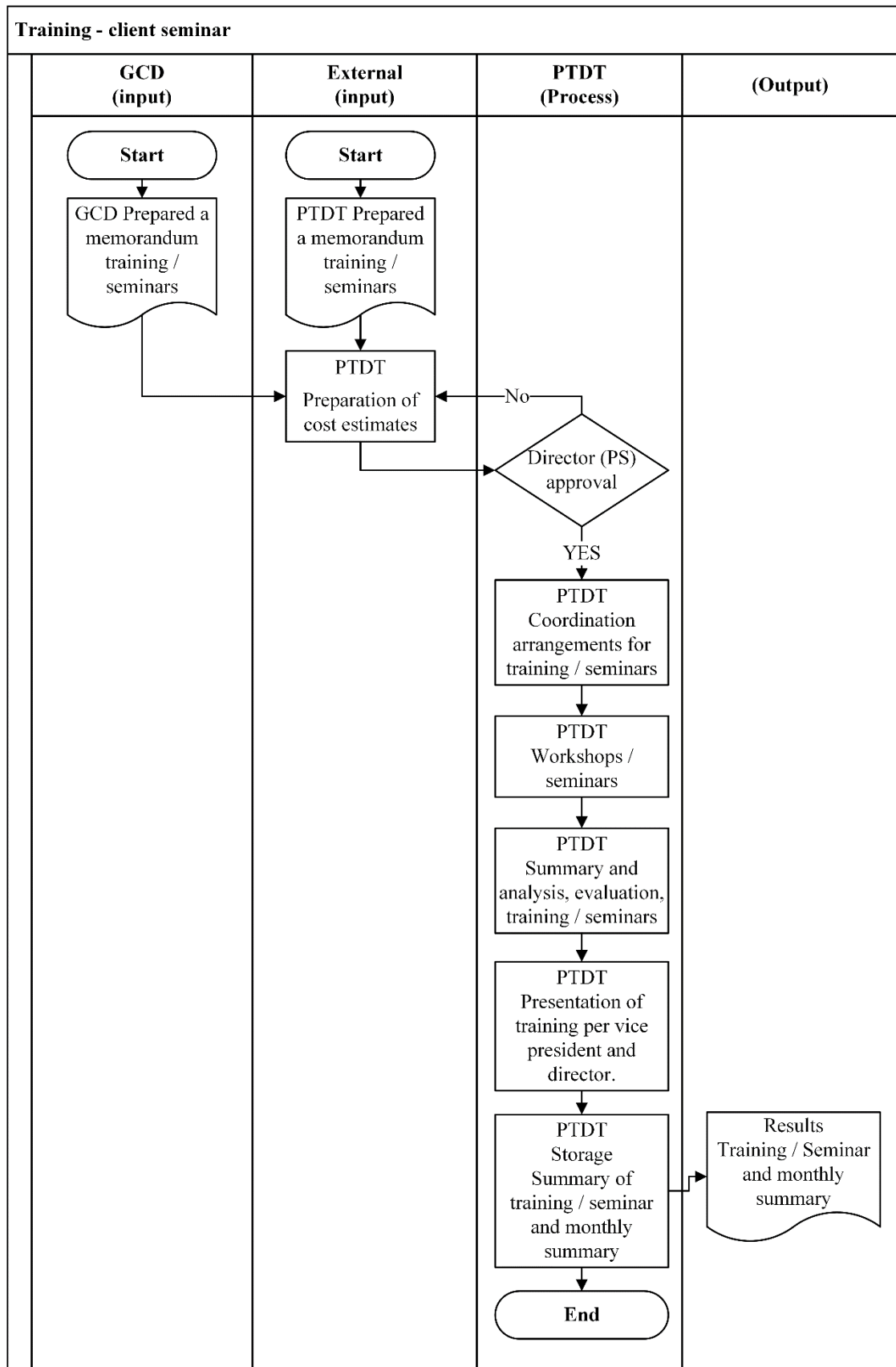


Figure 3.9 Training - Client Seminar Diagram.

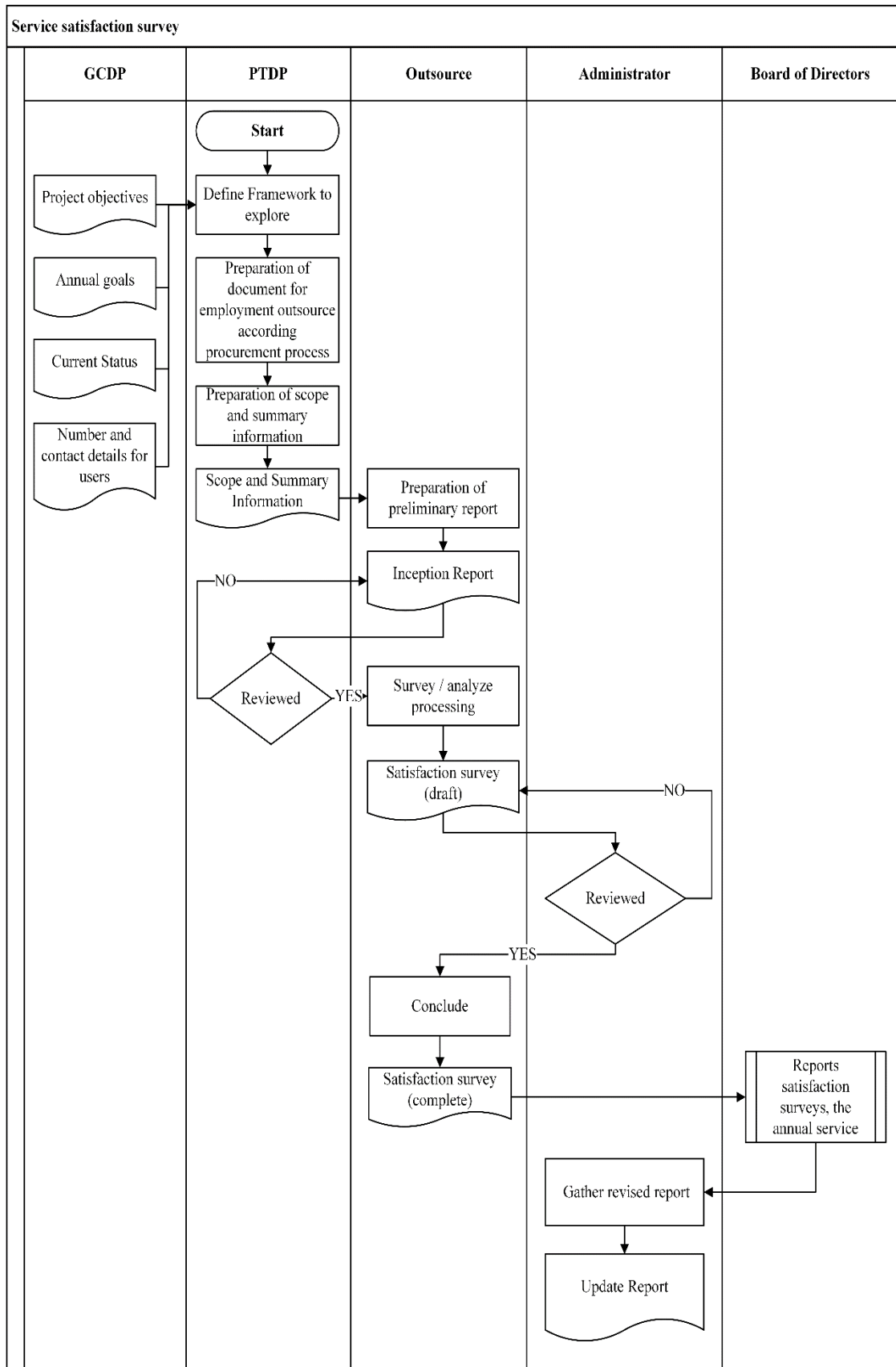


Figure 3.10 Service Satisfaction Survey Diagram.

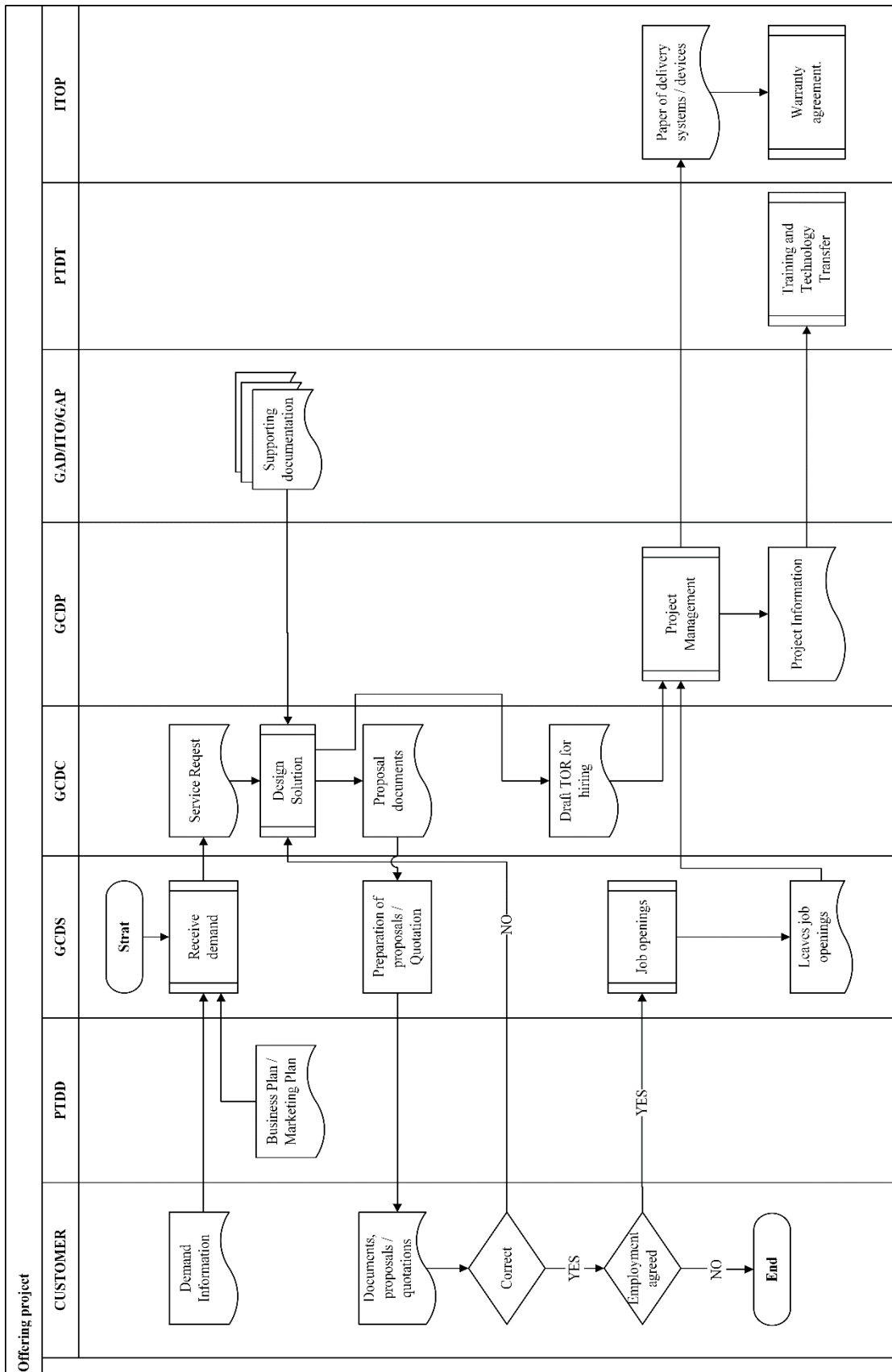


Figure 3.11 Offer Project Diagram.

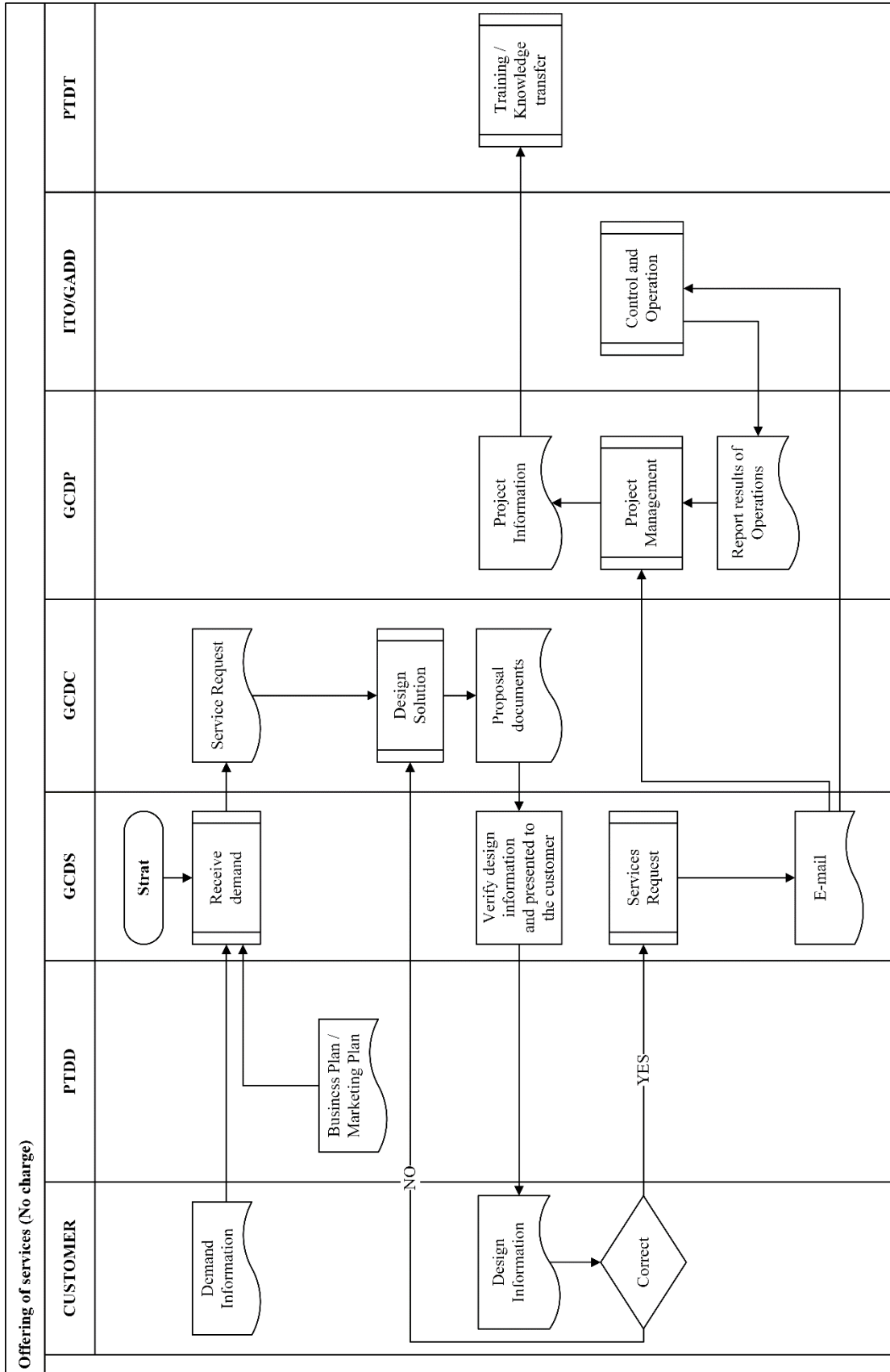


Figure 3.12 Offer of Services (No charge) Diagram.

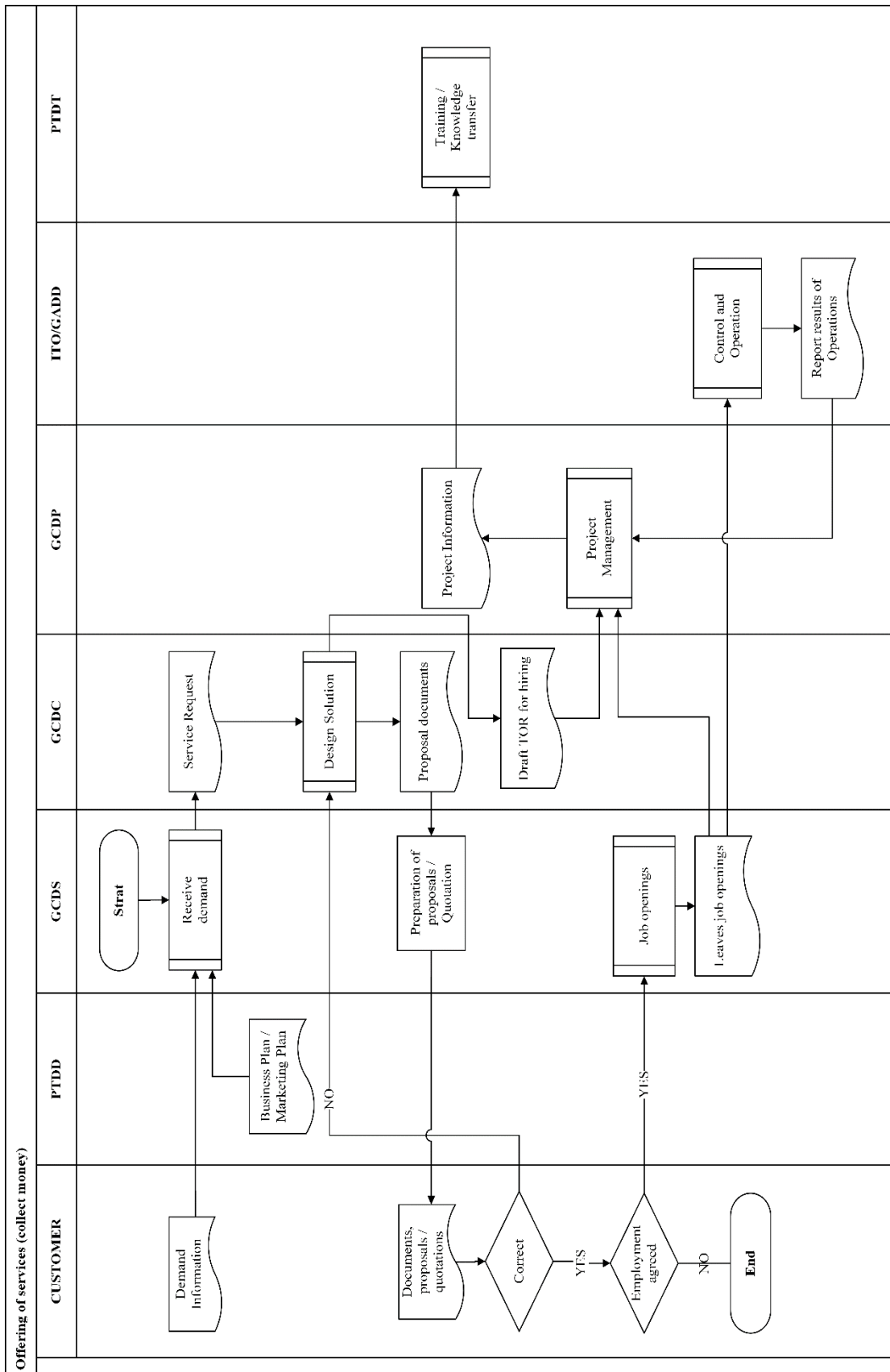


Figure 3.13 Offer of Services (Collect money) Diagram.

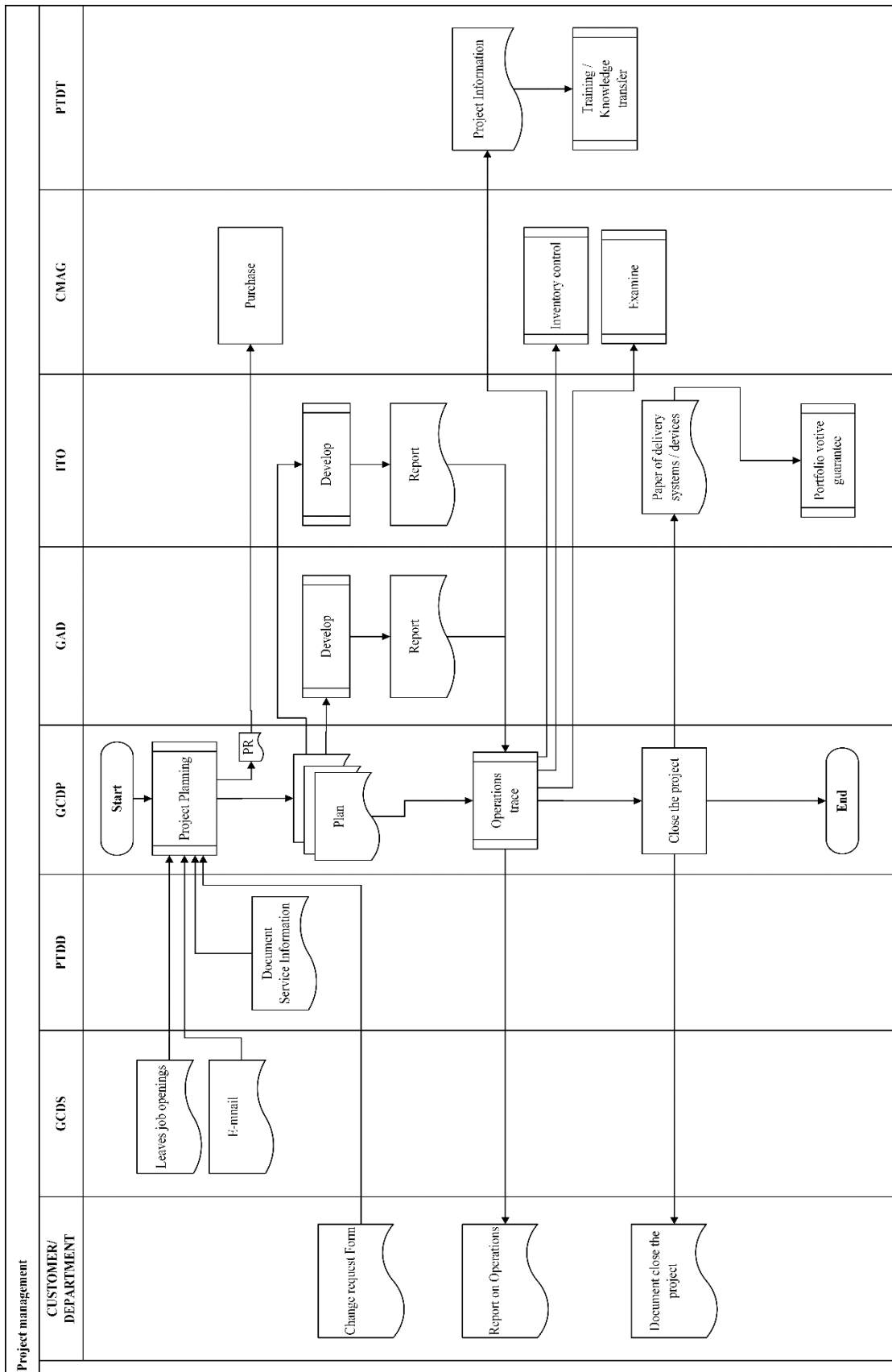


Figure 3.14 Project Management Diagram.

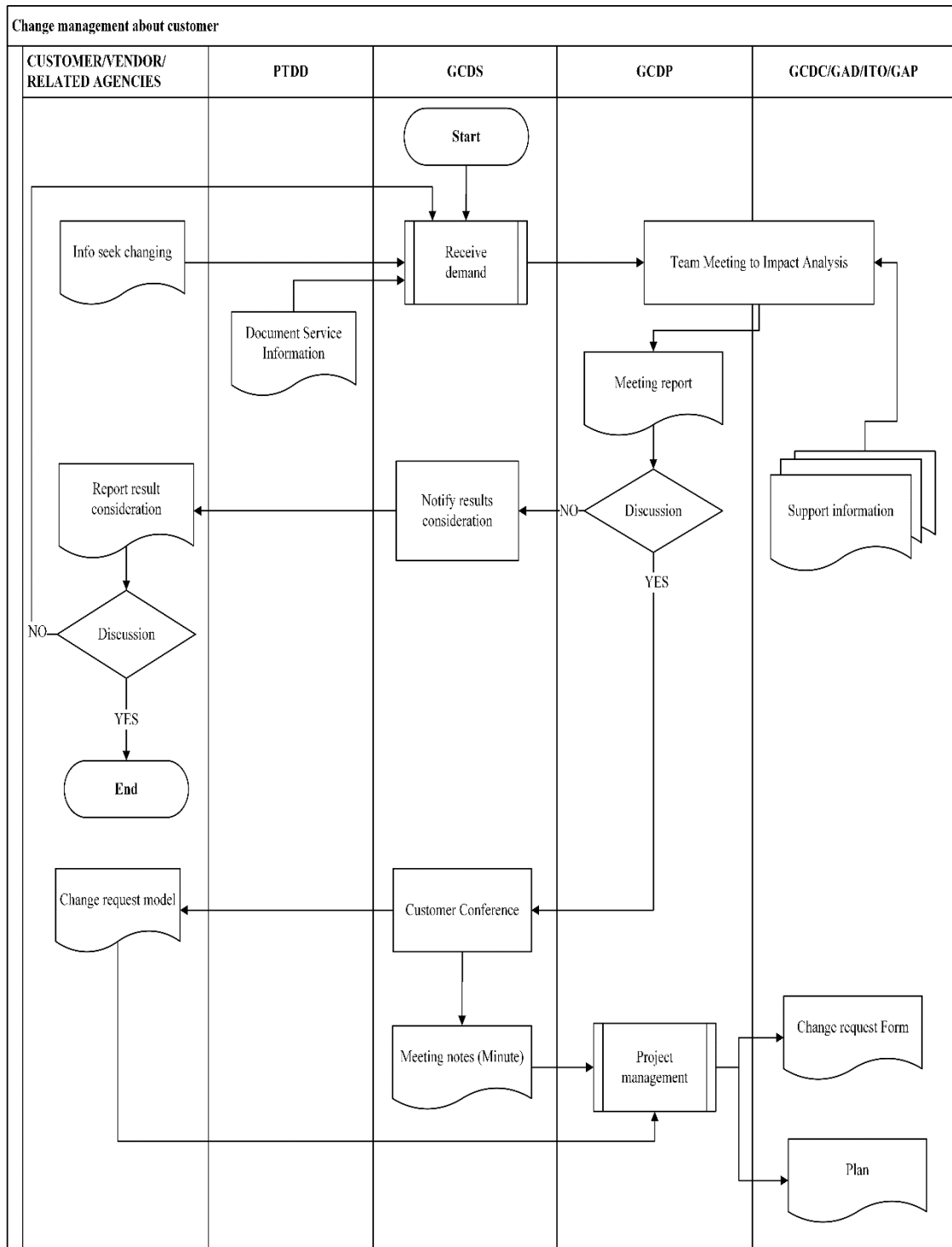


Figure 3.15 Change Management of Customer Diagram.

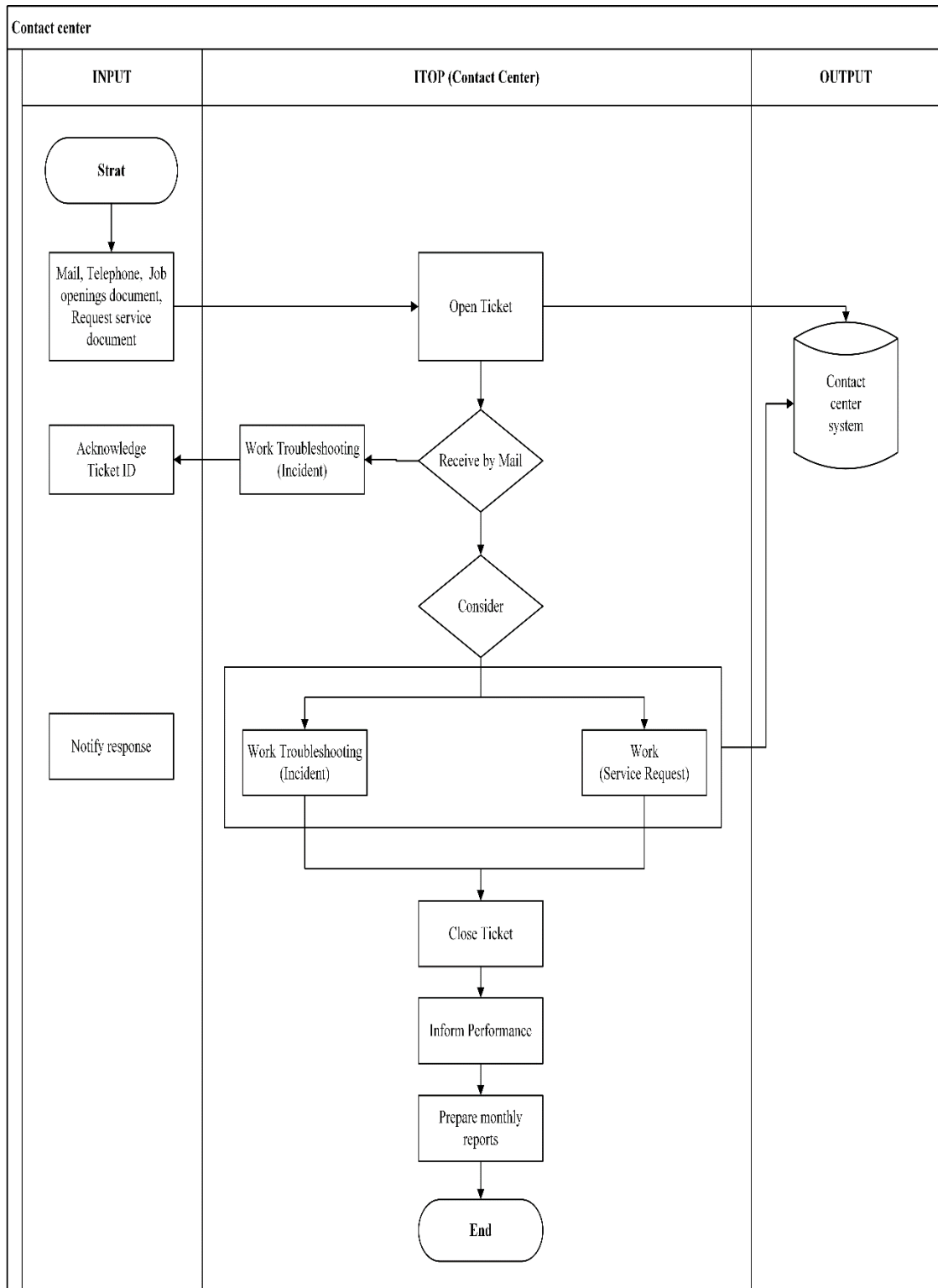


Figure 3.16 Contact Center Diagram.

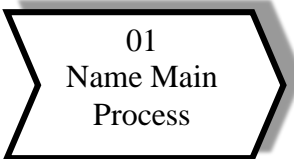
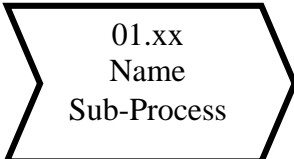
3.3 Improvement

To improve the implementation presentation of the business process, the redesign (To-Be Process) based on suggestions is given by the business flowchart and process map in accordance with the operational goals of the organization (Business Goals), policy, and vision taken into account:

- The convenient, fast, and continuity of operations.
- Compatibility of information systems for operations in the organization.
- Effective use of resources.
- A good internal control.
- Complication with standards.
- Opportunities of process improvement to enhance the operational efficiency.
- The clarity of operations.

Improving business processes in new ways will recognize an overview of the workflow for each process which is available in the Core Business Process, while each process will divide the work process down into sub-processes by using an arrow chart. In the sub-process, it will have the business process flow detailing the work, called Swim-lane Chart, by defining the various symbols and patterns used arrow chart in the process according to the Table 3.2. The preview of the arrow chart is shown in Figure 3.17.

Table 3.2 Patterns used arrow chart in the process.

Symbols	Meaning
	Process with sub-processes (A shadow on the picture) consists of process name and unique reference numbers process.
	Sub-process cannot be divided into sub-processes, but the flow of work and details of the work process, must be displayed, called Swim-lane Chart. It includes unique reference numbers of process and the name of the sub-process.

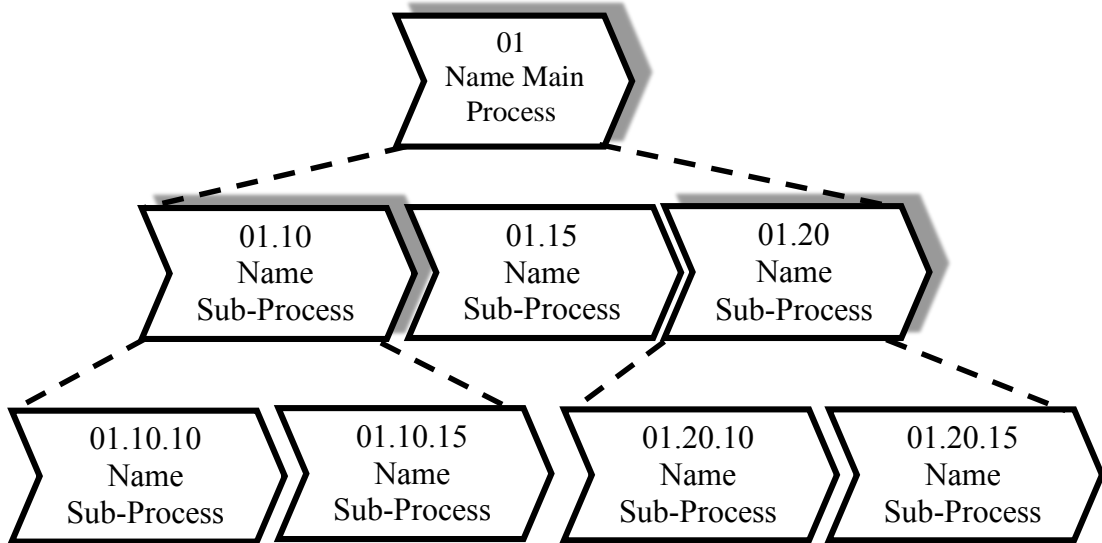


Figure 3.17 The example of arrow chart used to improve the process.

Sub-processes, if the end of the process is no other process required to continue the process, it must be shown in the pattern of flow in the swim-lane chart as shown in Figure 3.18. Components of a swim-lane chart are shown in Figure 3.19, and the symbols of a swim-lane chart are shown in Table 3.3.

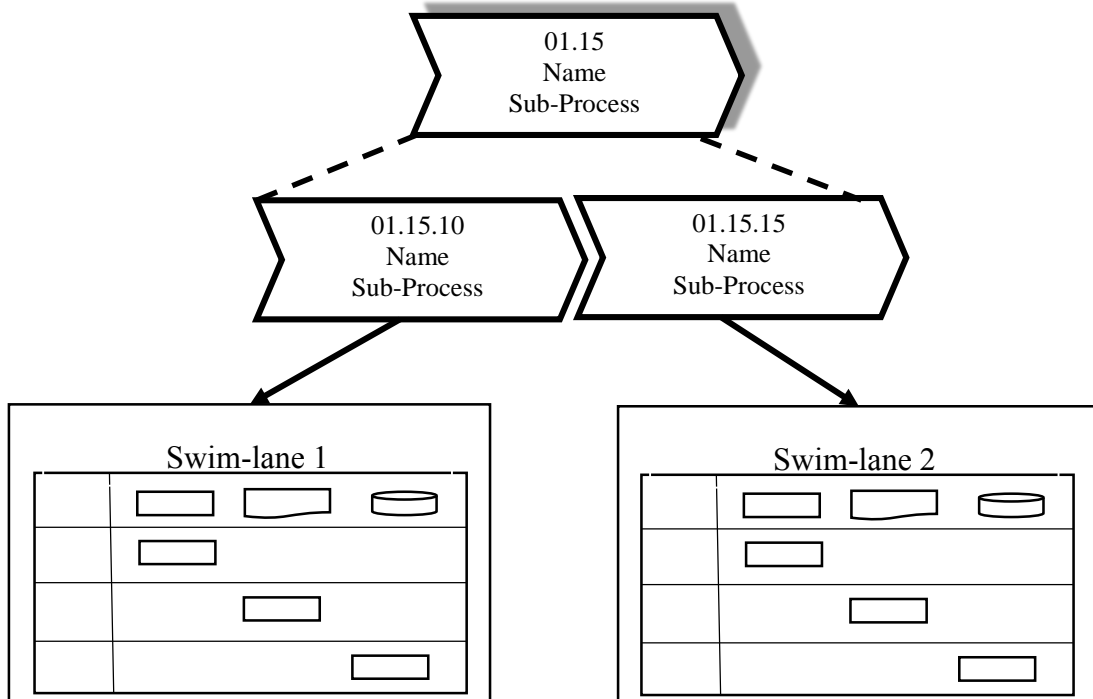





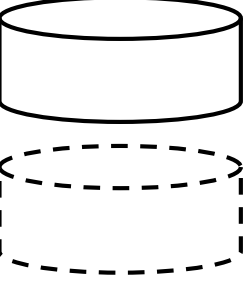
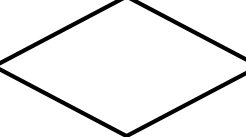
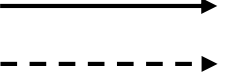


Figure 3.18 Processes and Patterns of flow in the Swim-lane Chart.

Table 3.3 Symbols in the Swim-lane Chart.

Symbol	Explanation
	Process is the process occurring within the Swim-lane chart of a given process.
	Sub-processes is linked to other processes.
	Document is a multiples of input or output.
	Input/output document of the process.
	Input/output data of the process.
	Database is an Information systems used in the process. A dash on the Database is database process in the future (To-BE).
	Decision is the process with decision or choice.
	Linking process Dashed lines link will point the way to a future database (To-Be).

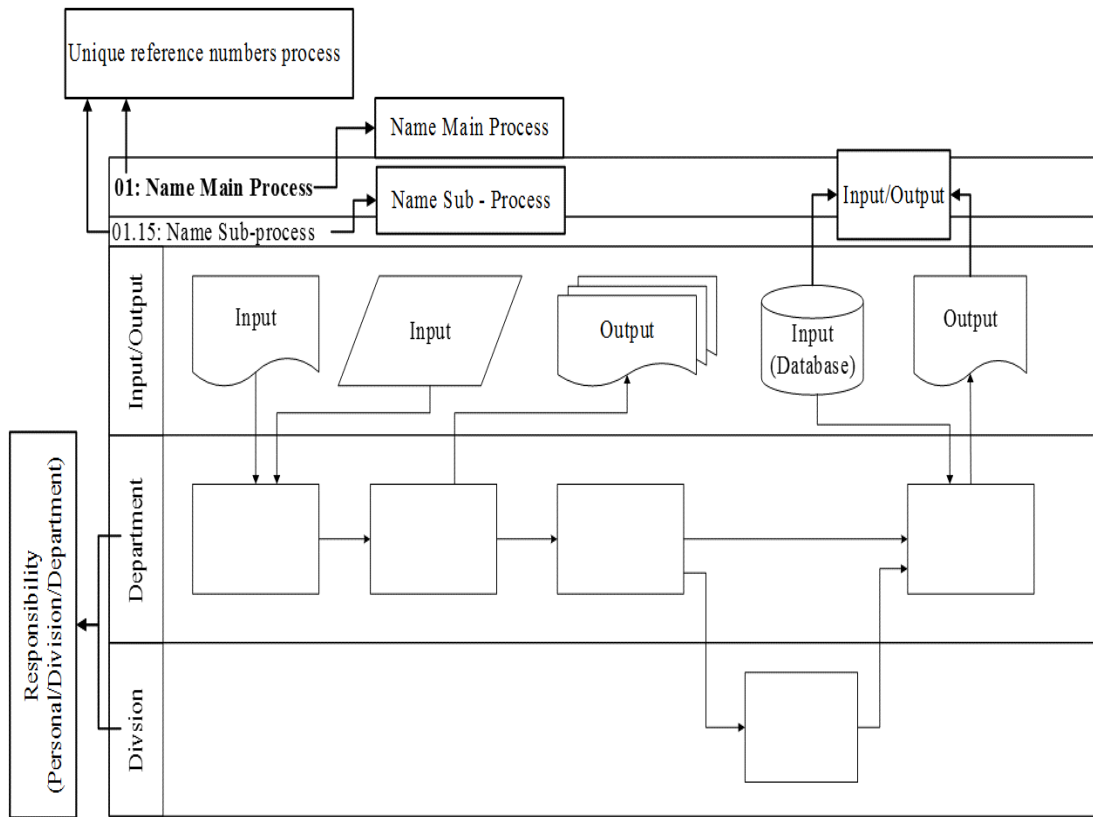


Figure 3.19 Components of the Swim-lane Chart.

3.3.1 Example of Improvement

This part shows how to design function-oriented BPI to the CRM sections for a sales management process, for example, in type agencies has to pursuit the profit and nonprofit of sale, as shown in Figure 3.20. The arrow chart diagram shown in Figure 3.20 is designed by the concept of function-oriented model, which emphasizes on the main process and its sub-processes, and slightly neglects the actor (or department) involved to the jobs. This concept typically shows the more obvious perspective of the selected process.

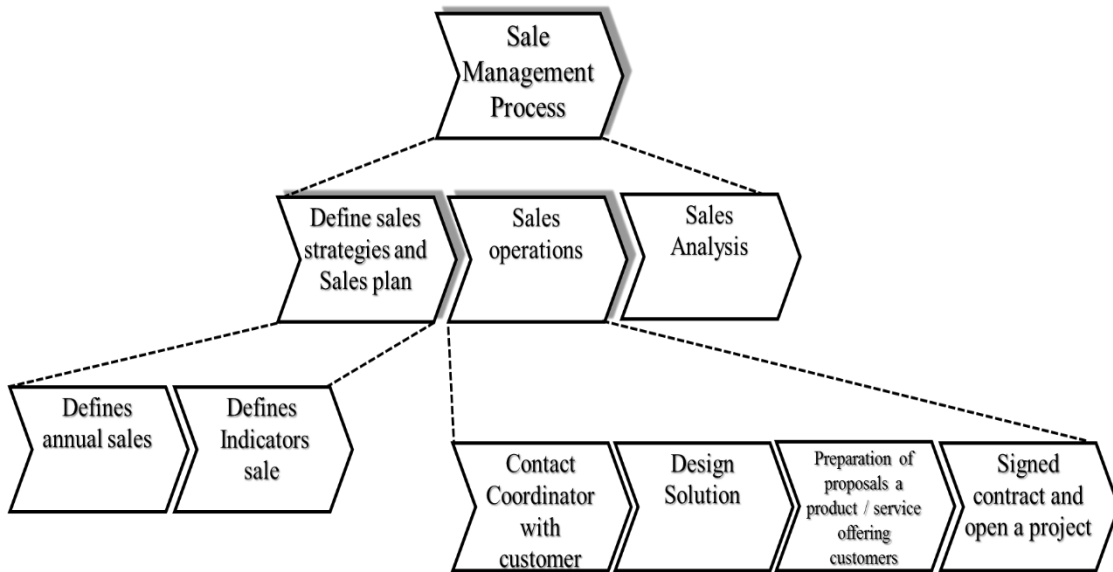


Figure 3.20 Process Arrow Chart of Sale Management Process.

According to the examples, each workflow process can be represented by Swim-lane Diagram on function-oriented model. As part of the sales operation, it is used to improve the process of CRM, as shown in Figure 3.21. This diagram is extended from the arrow chart diagram with the involved specific stakeholder, a separated input/output lane which facilitate for analysis and understanding.

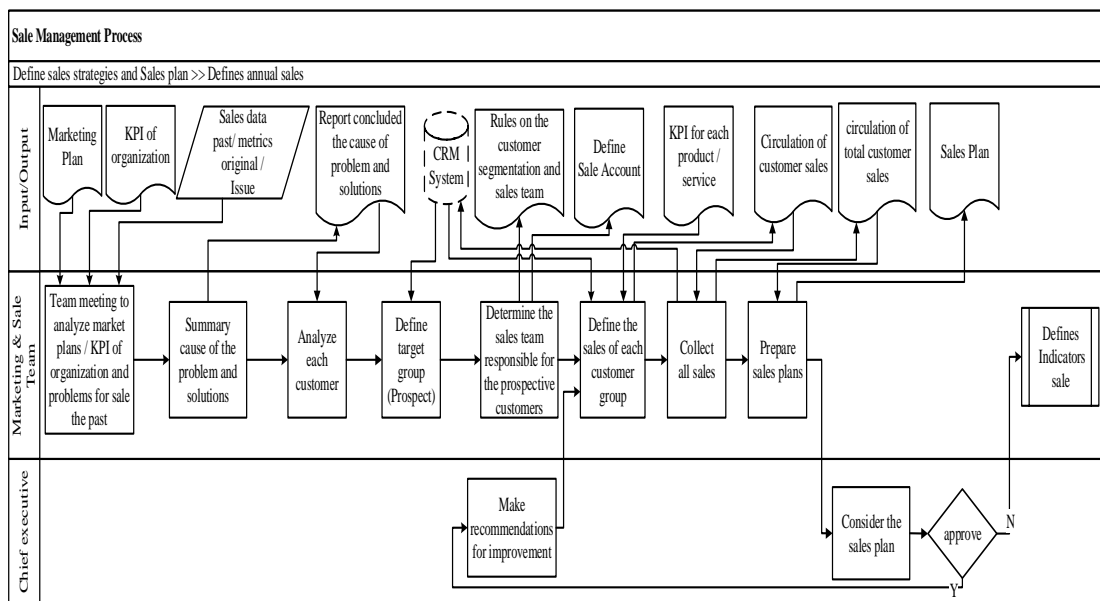


Figure 3.21 Swim-lane diagram of the defined annual sale.

3.4 Management

To achieve the clarity in their operations, the responsibilities, the participants, and sponsors are defined by assigning the roles and responsibilities, as follows:

- Those main responsibilities are the department or key personnel responsible for the operation.
- Those involved mean department or personnel and agencies that share responsibility in the process of working or involved with the performance.
- Sponsors mean personnel or agencies that help support the work.

3.5 Measurement

Measurement procedure is to examine the implementation and evaluation of business process improvement in customer relationship management by the chief information officer and chief executive officer, including relevant personnel to assess satisfaction survey under the new design process (function-oriented method) compared to the operational process old model of organization (actor-oriented process).

3.6 Scheduling of research

Research Steps	Months						
	1	2	3	4	5	6	7
1. Educational theory and Related works							
2. Data Analysis							
3. Design Process							
4. Process Development							
5. Implementation							
6. Evaluate							
7. Conclusion							

CHAPTER IV

RESULTS

This chapter present the data analysis of Function-oriented BPI for CRM in Large Scale Organization. The objective of this research is to improve business processes for CRM related to sales, marketing, and service by the data of qualitative research, which the results of improvement are described as follows:

4.1 Function-oriented BPI for Marketing Management Design

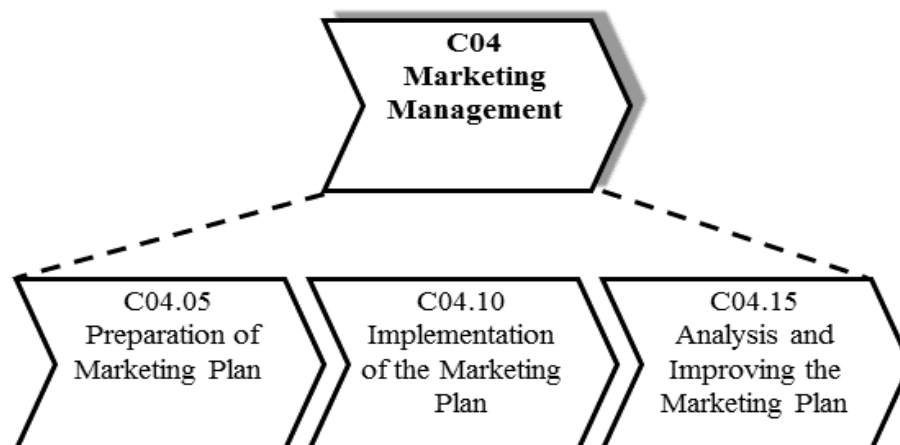


Figure 4.1 Process of Arrow Chart (Marketing Management Process).

Marketing management is a planning process for analyzing the status of the marketing, strategy, product and service. Upon the marketing plan success will the implementation of the marketing plan. The last step is the analysis and improvement action plan.

4.1.1 (C04.05) - Preparation of Marketing Plan

The process for developing the marketing strategy requiring the preparation of a marketing plan is very important for the organization to define the direction, development, marketing, and sales in order to serve the needs of our customers. This process includes the analysis and the service strategy defining of each product for creating a strategic plan, setting the customer target group, and defining the distribution channels. With the consistently planned research, and the new product development of the organization, the customer segmentation strategies, and goals should be clearly. The next step is to define the marketing plan to meet the needs of the target groups. This marketing plan consists of plans, tasks, projects, and activities to reach customers. The stakeholder of marketing plan preparation is shown in Table 4.1, and its workflow is shown in Figure 4.2.

Table 4.1 Stakeholder of Marketing Plan Preparation.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	- Marketing and Communication Division (CSM) - Consulting Service Department (CS)	Marketing and Communication Division (CSM) and Consulting Service Department (CS) are primarily responsible for the preparation of a marketing plan.
2	Accountability	Executive council	Executive council is authorized to approve the marketing plan.

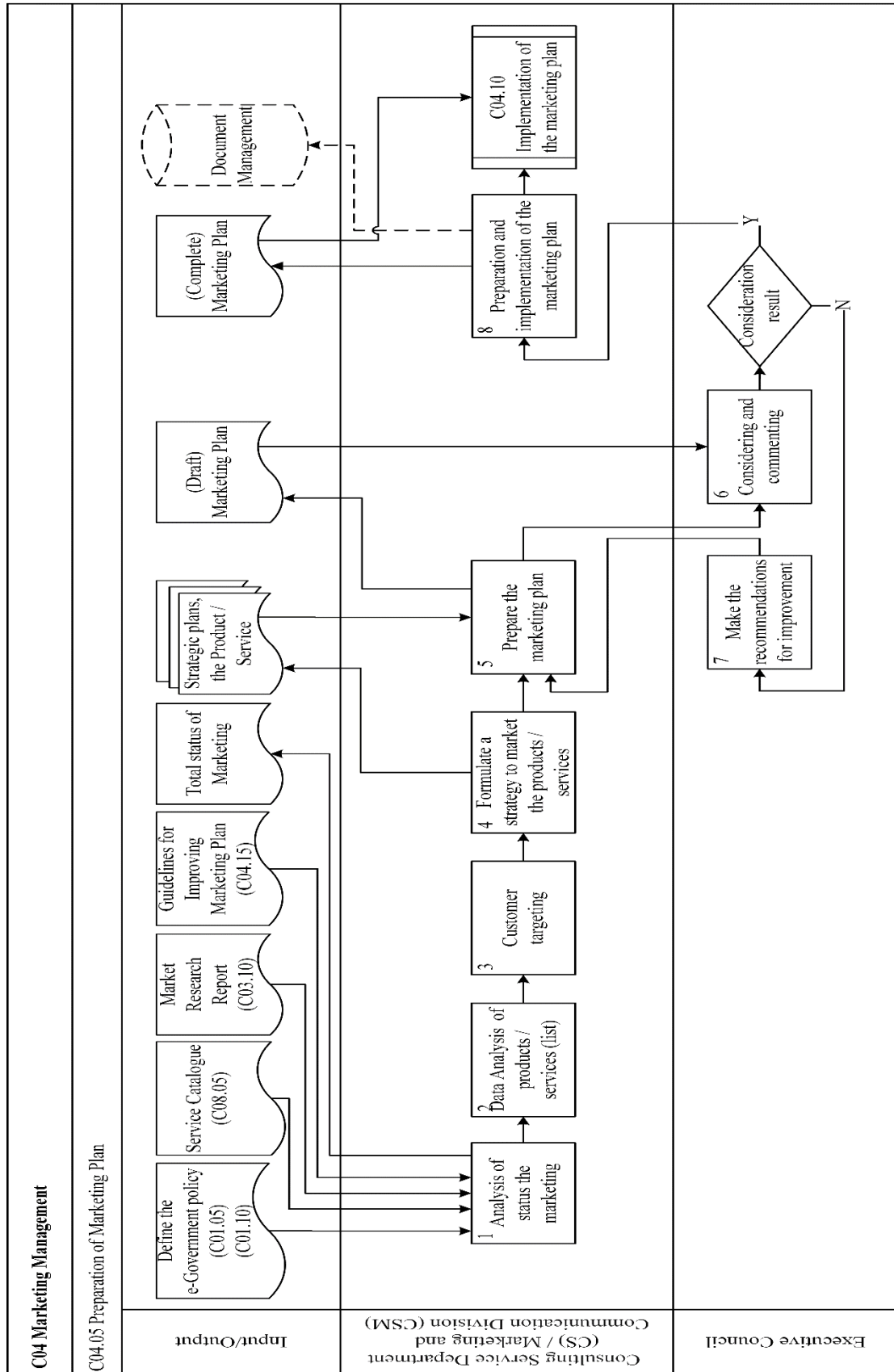


Figure 4.2 (C04.05) - Preparation of Marketing Plan Diagram.

4.1.2 (C04.10) - Implementation of the Marketing Plan

The implementation of the marketing plan will be occurred, when a plan is approved by the executive committee and each division related to the implementation of the marketing plan. Implementation of the marketing plan has the stakeholders as shown in Table 4.2, and workflow is shown in Figure 4.3.

Table 4.2 Stakeholder of Implementation of the Marketing Plan.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsible	- Marketing and Communication Division (CSM) - Consulting Service Department (CS)	Marketing and Communication Division (CSM) and Consulting Service Department (CS) determine the responsibility and action plan.
2	Support	Agency responsible (Division/Department)	Agency responsible (Division / Department) shall prepare a detailed action plan, and must be followed.

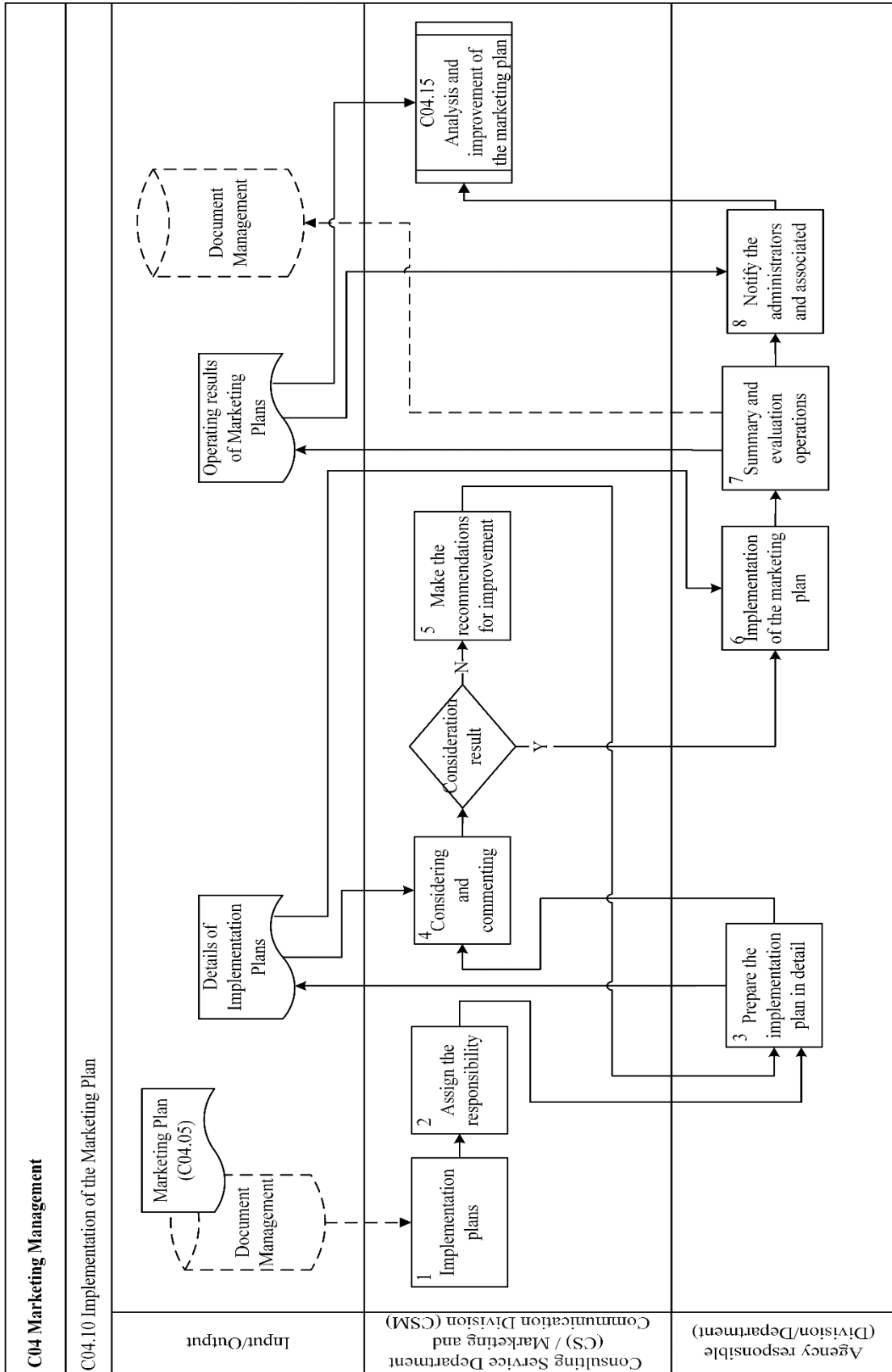


Figure 4.3 (C04.10) - Implementation of the Marketing Plan Diagram.

4.1.3 (C04.15) - Analysis and Improve the Marketing Plan

The process analysis and improvement of the marketing plan is an operating process on the market plan. The operator concludes the operating results, analysis are improved action plan to improve marketing plan, and the improved marketing efficiency of the organization. Analysis and Improvement of the Marketing Plan for stakeholders are shown in Table 4.3, and workflow is shown in Figure 4.4.

Table 4.3 Stakeholder of Analysis and Improvement of the Marketing Plan.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	- Marketing and Communication Division (CSM) - Consulting Service Department (CS)	Marketing and Communication Division (CSM) and Consulting Service Department (CS) are served to analyze and improve the marketing plan.

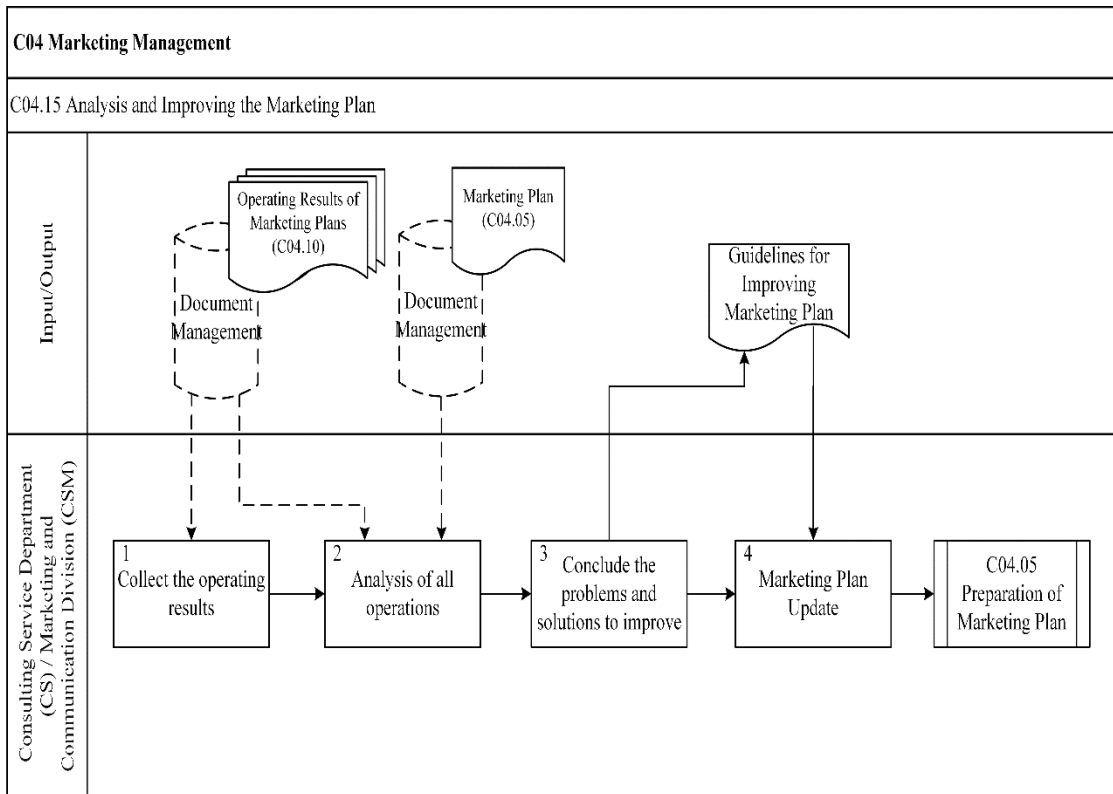


Figure 4.4 (C04.15) - Analysis and Improvement of the Marketing Plan Diagram.

4.2 Function-oriented BPI of Sale Management Design

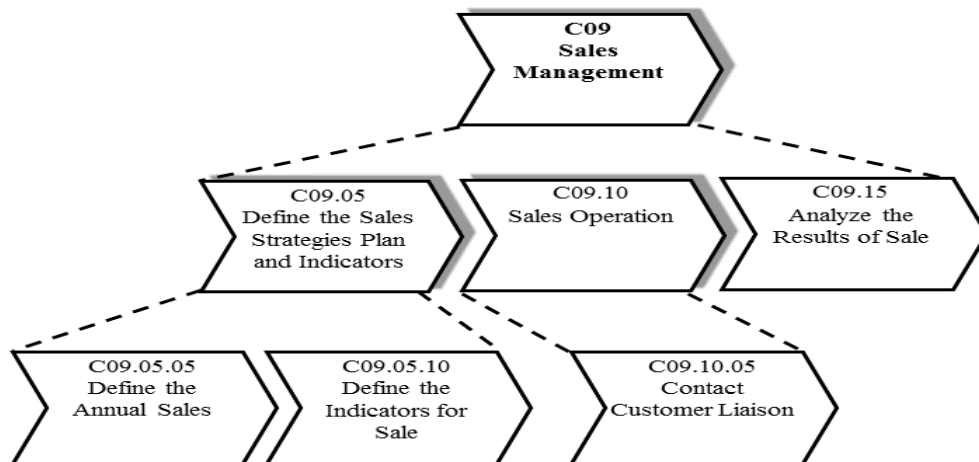


Figure 4.5 Process Arrow Chart of Sale Management Process.

The sales management is intended to be an effective sales process consisting of the process of planning strategy to sell along with defining indicators to determine the policy of the sale process, solution design, making the proposals, signing the contract, and contract management. Finally we bring the data analysis and the evaluation process.

4.2.1 (C09.05.05) – Defining the Annual Sales

The process used to determine the annual sales will be covered including the process of the team organizing to analyze the marketing plan, customer analytics, targeting of customers group, defining the annual sale of their each sales team, and the preparation of sales plans. Defining Annual Sales has stakeholders as shown in Table 4.4, and workflow as shown in Figure 4.6.

Table 4.4 Stakeholder of Defined Annual Sales.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	IT Consulting Division (CSI)	IT Consulting Division (CSI) serves the analyzed marketing plan to determine the sales plan.
2	Accountability	Executive Council	The executive council serves consideration and approval of the plan.

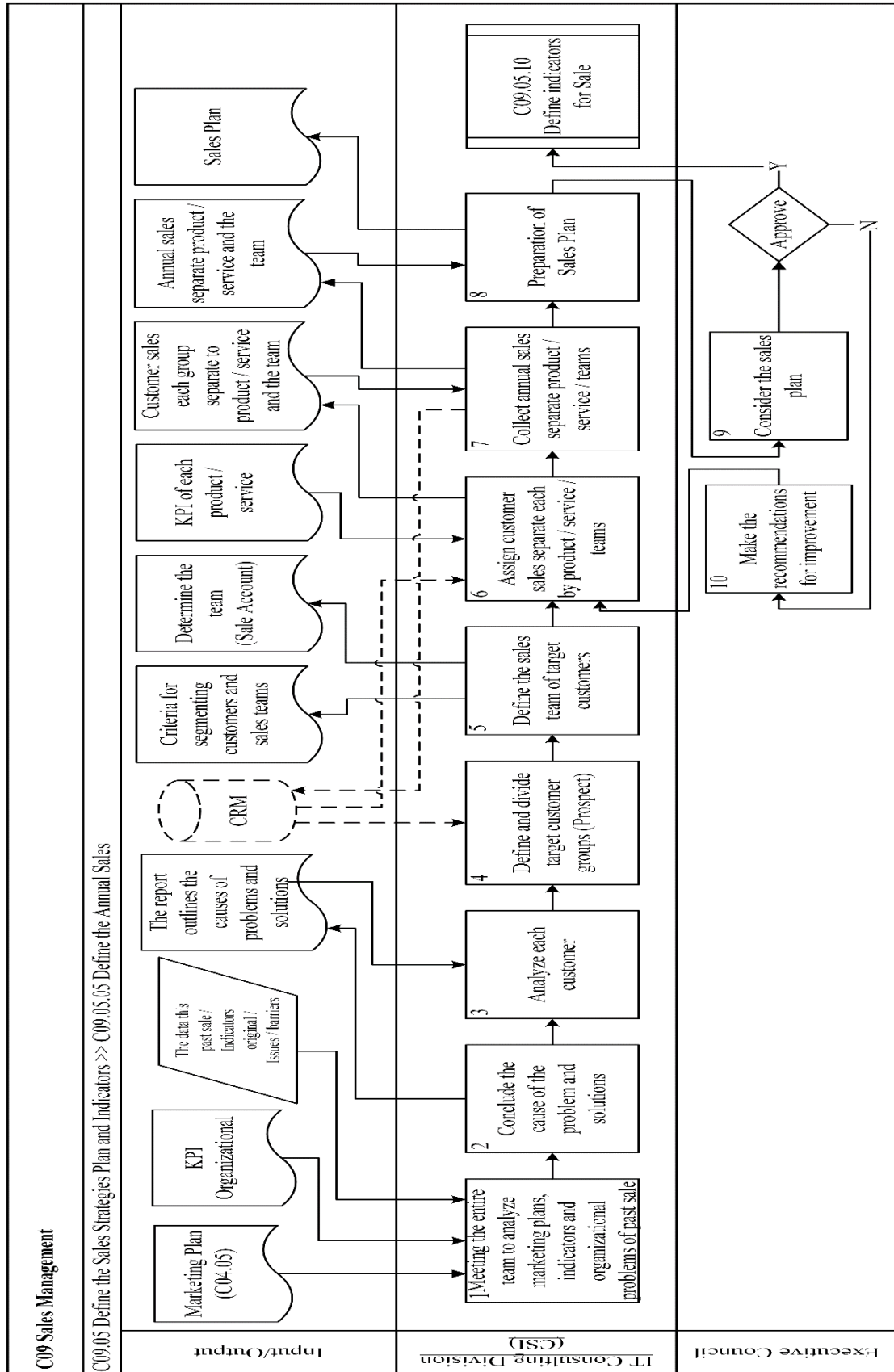


Figure 4.6 (C09.05.05) – Defined the Annual Sales Diagram.

4.2.2 (C09.05.10) - Define Indicators for Sale

The process of defining indicators for sale is a step to determine a measure of performance in sales of IT Consulting Division (CSI) in the process to cover the operating procedures, individual indicators, considering the draft metric, and the acknowledge indicators are built. The defined Indicators for Sale of stakeholders are shown in Table 4.5, and workflow is shown in Figure 4.7.

Table 4.5 Stakeholder of Define Indicators for Sale

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	IT Consulting Division (CSI)	IT Consulting Division (CSI) is responsible for defining the individual indicators, acknowledgement and accept are of the metrics prepared.
2	Accountability	Manger of Consulting Service Department(CS)	Manger of Consulting Service Department (CS) will be responsible for review, and the approval indicators are prepared.

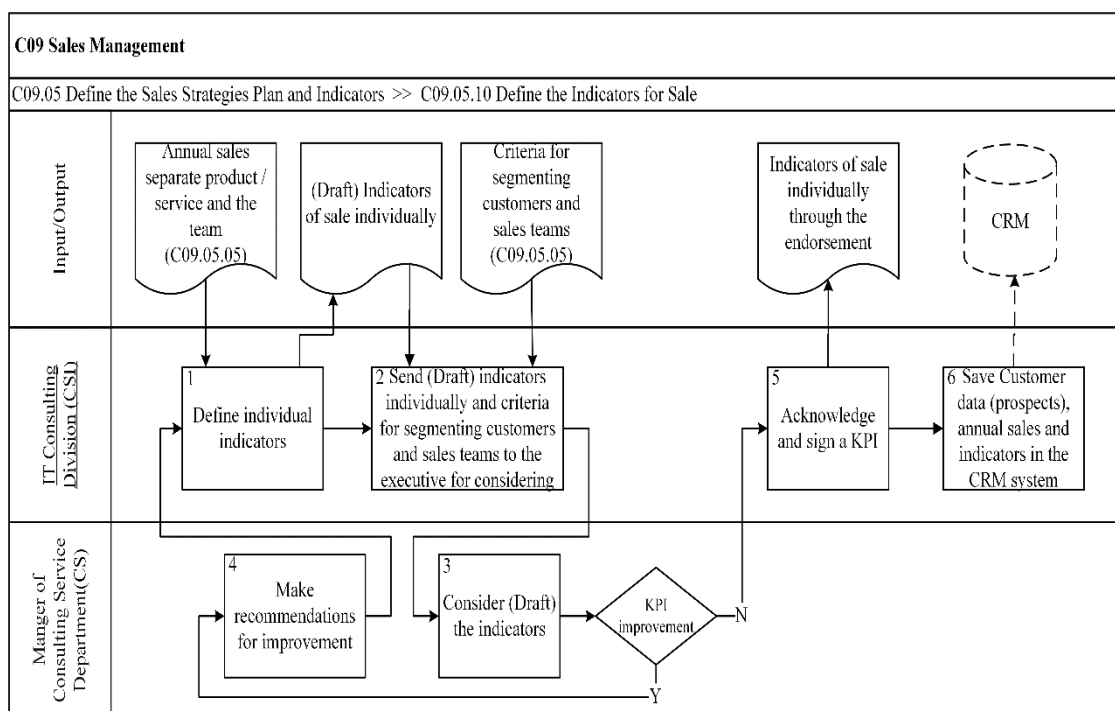


Figure 4.7 (C09.05.10) – Defined the Indicators for Sale Diagram.

4.2.3 (C09.10.05) - Contact Customer Liaison

The process is used to liaise with customers to meet and keep the needs of the service of organization to know the requirements and preparation of product and service for offering the customers, the details of the study are covered including the process study, customer data, and contact. The final step concludes the needs of the customer. Contact Customer Liaison with stakeholders is shown in Table 4.6, and workflow is shown in Figure 4.8.

Table 4.6 Stakeholder of Contact Customer Liaison.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	IT Consulting Division(CSI) - Service	IT Consulting Division (CSI) - Service to contact and offer various services of the organization, including the storage needs of the client to prepare the products/services primarily to offer its customers. Until the process of the needs of the customer.
2	Support	IT Consulting Division (CSI) - Technology	IT Consulting Division (CSI) - Technology is responsible for advising the consideration of the feasibility of implementation.
3	Accountability	Project Management Division (CSP)	Project Management Division (CSP) (PM Product) checks availability of the service.

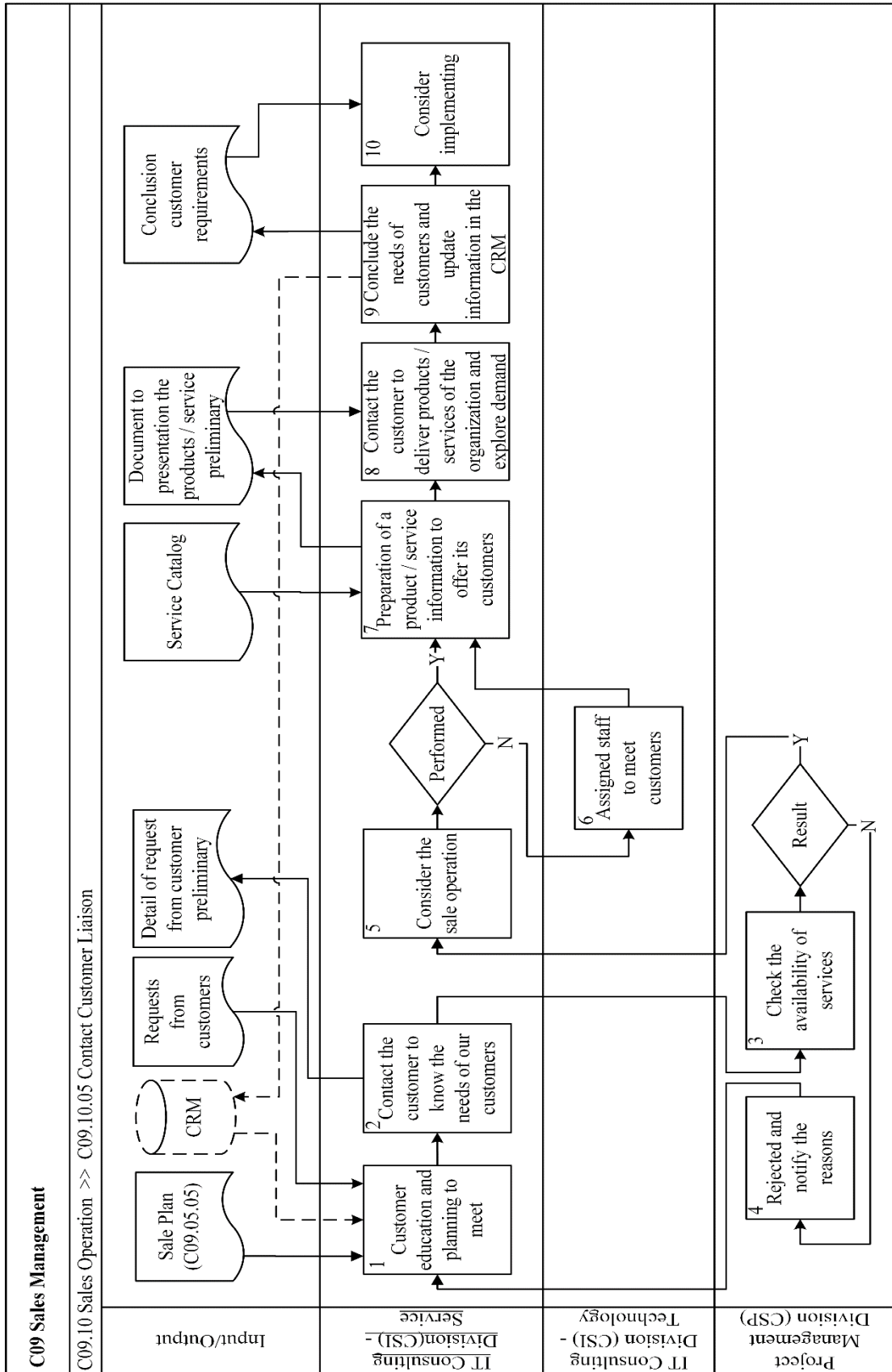


Figure 4.8 (C09.10.05) – Contacting the Customer Liaison Diagram.

4.2.4 (C09.15) - Analyze Results of Sale

The procedure used to analyze the results of sale have undertaken to bring the data of problem and the preparation of guidelines for improving more effective sales plan. Hence, this aims the sales surpassed the target set. The analysis Results of Sale with stakeholders are shown in Table 4.7, and workflow is shown in Figure 4.9.

Table 4.7 Stakeholder of Analyze Results of Sale.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	IT Consulting Division (CSI)	IT Consulting Division (CSI) serves to prepare a report the result of sales analysis and preparation plan to improve.
2	Accountability	Executive Council	The executive council serves consider and approve the plan.

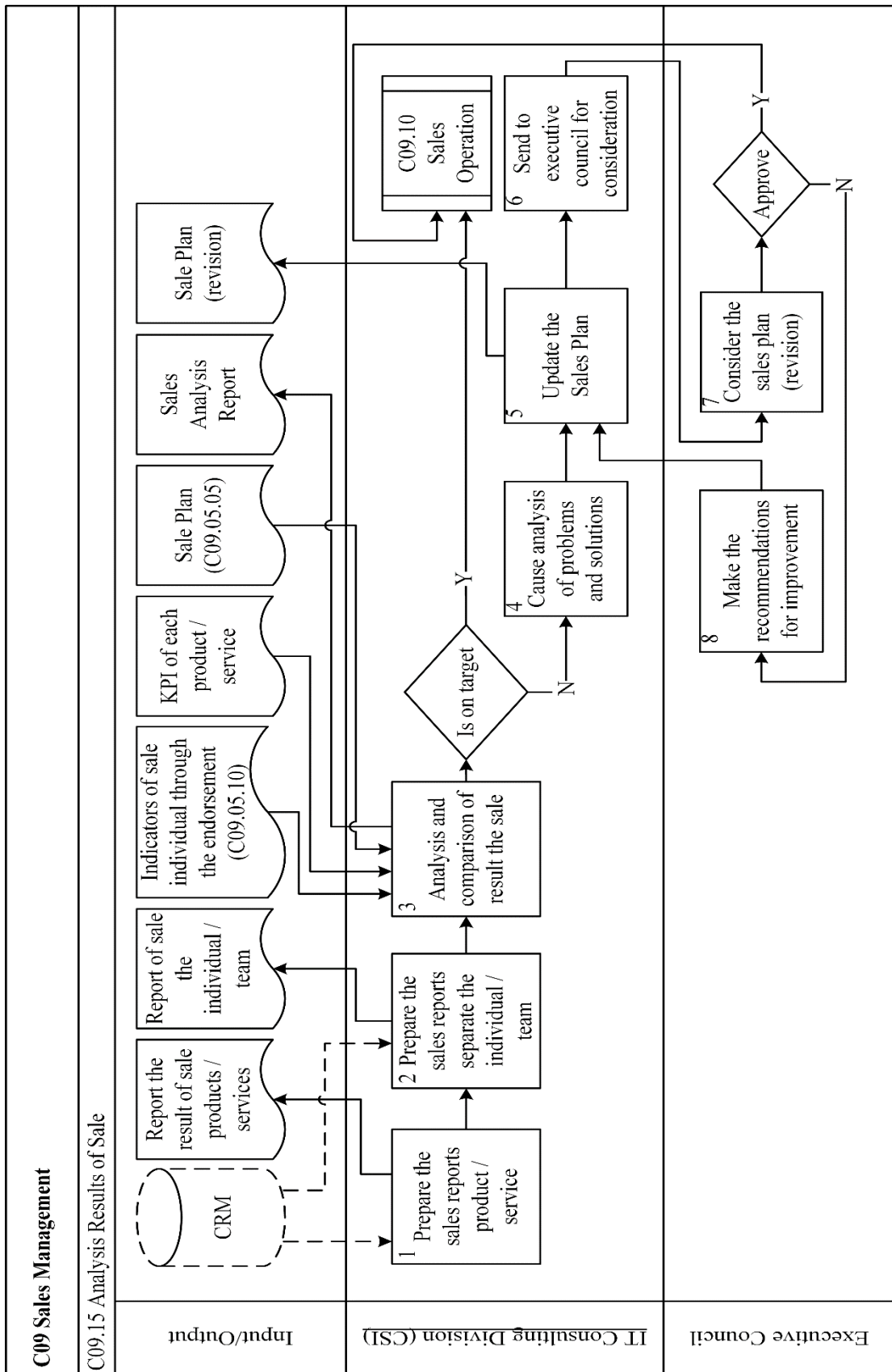


Figure 4.9 (C09.15) - Analysis Results of Sale Diagram.

4.3 Function-oriented BPI of Customer Support Design

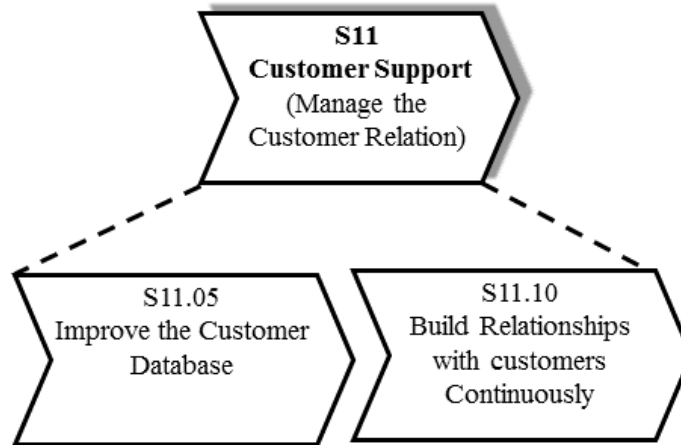


Figure 4.10 Process of Arrow Chart (Customer Support Process).

Customer Relationship Management (CRM) is the process of creating/maintaining the customer loyalty to the organization which focuses on the processes and activities to acquire customers, keeping customers, build the customer confidence per the product and corporate services. CRM is powerful contain the four elements as follows:

1. The creation of database is a database of customers/group that is expected to be a customer (Prospects), which a database is accurate and complete to record a history of customer (Customer Profile) segmenting the right customers and accessing the data of the customer at any time.
2. The use of technology is to maximize the channels to contact, and is easily for accessibility of customers as Call Center, Web Site, etc. It processes to issue a report or presentation of the conditions required.
3. Action to keep in touch and interact with customers; It is to separate the segment customer group, activities or programs with different target groups.
4. Retention to evaluate customers: We intend to maintain the long-term customer focusing on delivering value to the customer than the customer expects.

4.3.1 (S11.05) - Improve Customer Database

The process of improving the customer database is a process to update data of customers so that information is accurately and currently used for activities such as the improvement of information of the customer used service, contact information coordinator contact, information technology, etc. The improved customer database with stakeholders is shown in Table 4.8, and workflow is shown in Figure 4.11.

Table 4.8 Stakeholder of Improved Customer Database.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	IT Consulting Division (CSI)	IT Consulting Division (CSI) has a duty to review the customer information, and coordinate with the stakeholders to update the data.
2	Support	Customer	Customers is the operator for the current information.
3	Support	Engineering and Operations Department (EN)	Engineering and Operations (EN) is responsible for the technical data improvement of the customer.

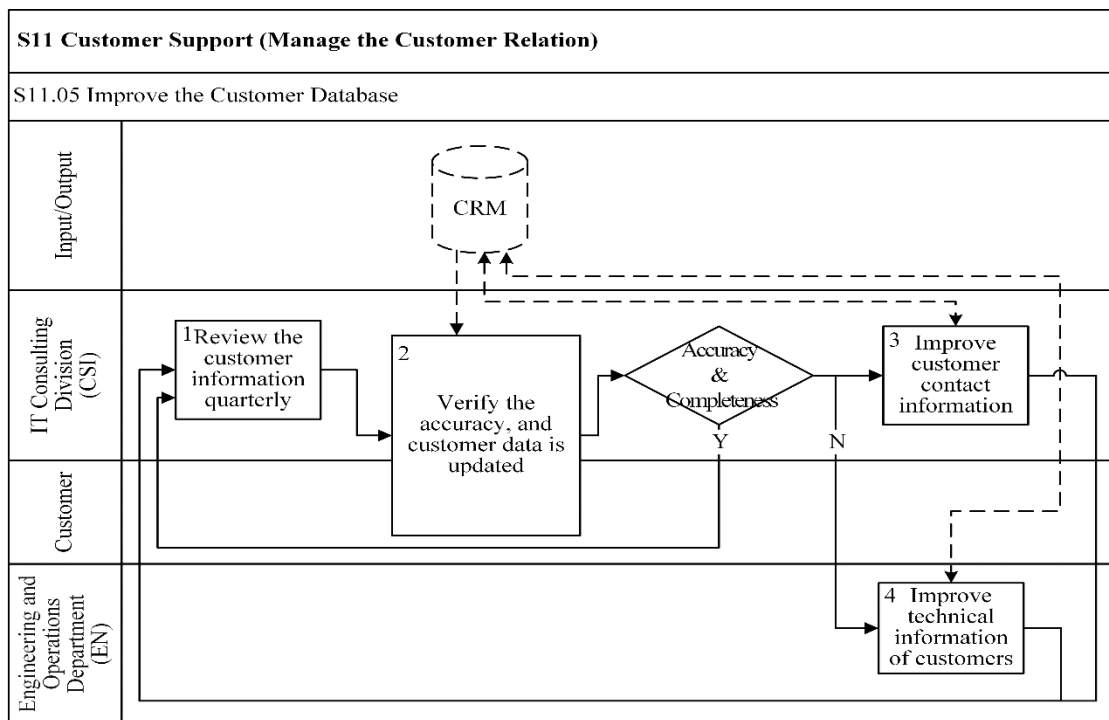


Figure 4.11 (S11.05) – Improved of Customer Database Diagram.

4.3.2 (S11.10) – Building the Relationships with Customers Loyalty

A process is to build the customer satisfaction and relationship building and maintaining the customer loyalty for the organization, customer retention, and enhances the customer confidence in the products and services of the organization. The process of building relationships with customer's loyalty with stakeholders is shown in Table 4.9, and workflow is shown in Figure 4.12.

Table 4.9 Stakeholder of Build Relationships with Customers Loyalty.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	CRM Team	CRM Team is responsible for planning, building customer relationships, and relationship building activities.
2	Accountability	Executive Council	Executive Council is responsible for considering and approving the plan to build relationships with customers.

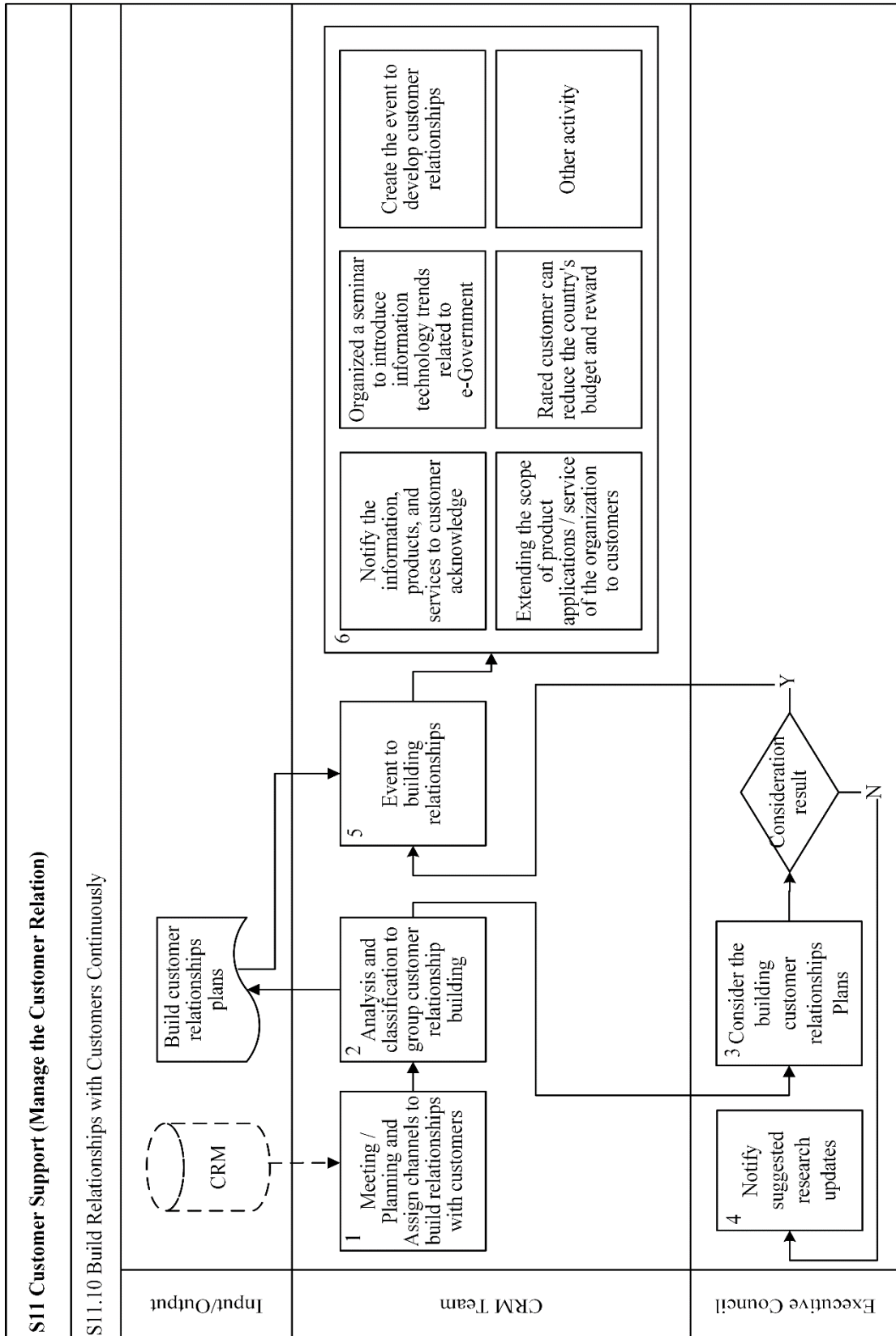


Figure 4.12 (S11.10) – Process Diagram of Building the Relationships with Customers Loyalty.

4.4 Function-oriented BPI of Public Relations Design

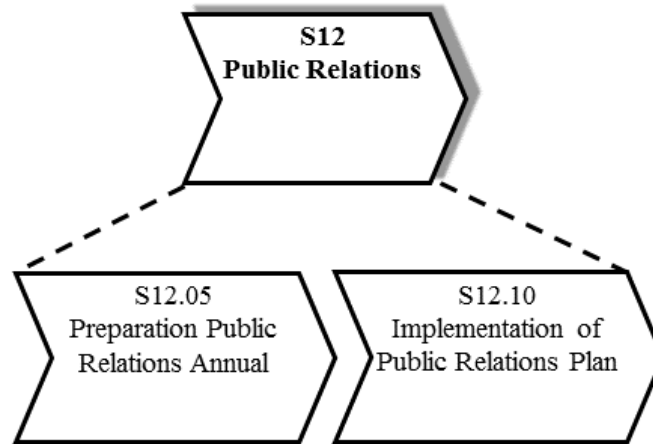


Figure 4.13 Process of Arrow Chart (Public Relation Process).

Public relation, the public relations management process with media management, is particularly important in the communication between the organization and the individual person, so that communications, reviews, news and facts are into the public. Strengthen relations and understanding are between agencies, organizations, institutions, groups of the public concerned in order to aspire the cooperation from the support of public as well as the participation enhances the best image to the institutions and organizations. This process gives the popularity, admiring, believing in the agency, and eliminates the source of misunderstandings to refute the issue to the successful operation of the agency. It must have been produced to be presented to the audience to know the various communication channels such as television, radio, electronic media (Social networking), etc. The target audiences for public relations action are given as: the target customers and the people individuals within the organization. The process includes preparation of public relations of annual and implementation of a public relations plan.

4.4.1 (S12.05) – Preparation of Annual Public Relations

Preparation of annual public relations requested by public relations is planned to achieve the purpose of the introduction of new products/services to our target consumers. Nonetheless, to provide information on the types of products/services, the benefits, features, and products/services are importance for the information technology system in the country. Moreover, it creates the unique product/service to the customer to remember the name of the organization/service, as well as motivating, and is attracted by the promotion process so that annual plan will be approved for implementation. The Preparation of Annual Public Relations with stakeholders is shown in Table 4.10, and workflow is shown in Figure 4.14.

Table 4.10 Stakeholder of Preparation Public Relations Annual.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	Marketing and Communication Division(CSM) /Knowledge Management and Information Division(CSK)	Marketing and Communication Division (CSM) /Knowledge Management and Information. Division (CSK) is responsible for the preparation of plans for public relations to prepare a draft plan prepared for presentation to the executive to consider.
2	Accountability	Consulting Service Department(CS)	Consulting Service Department (CS) has served as an approval public relations plan to continue.
3	Input	The Related task Section	The related task section is responsible for leading the implementation of the project activities to the public relations for information purposes the part of annual public relations activities.

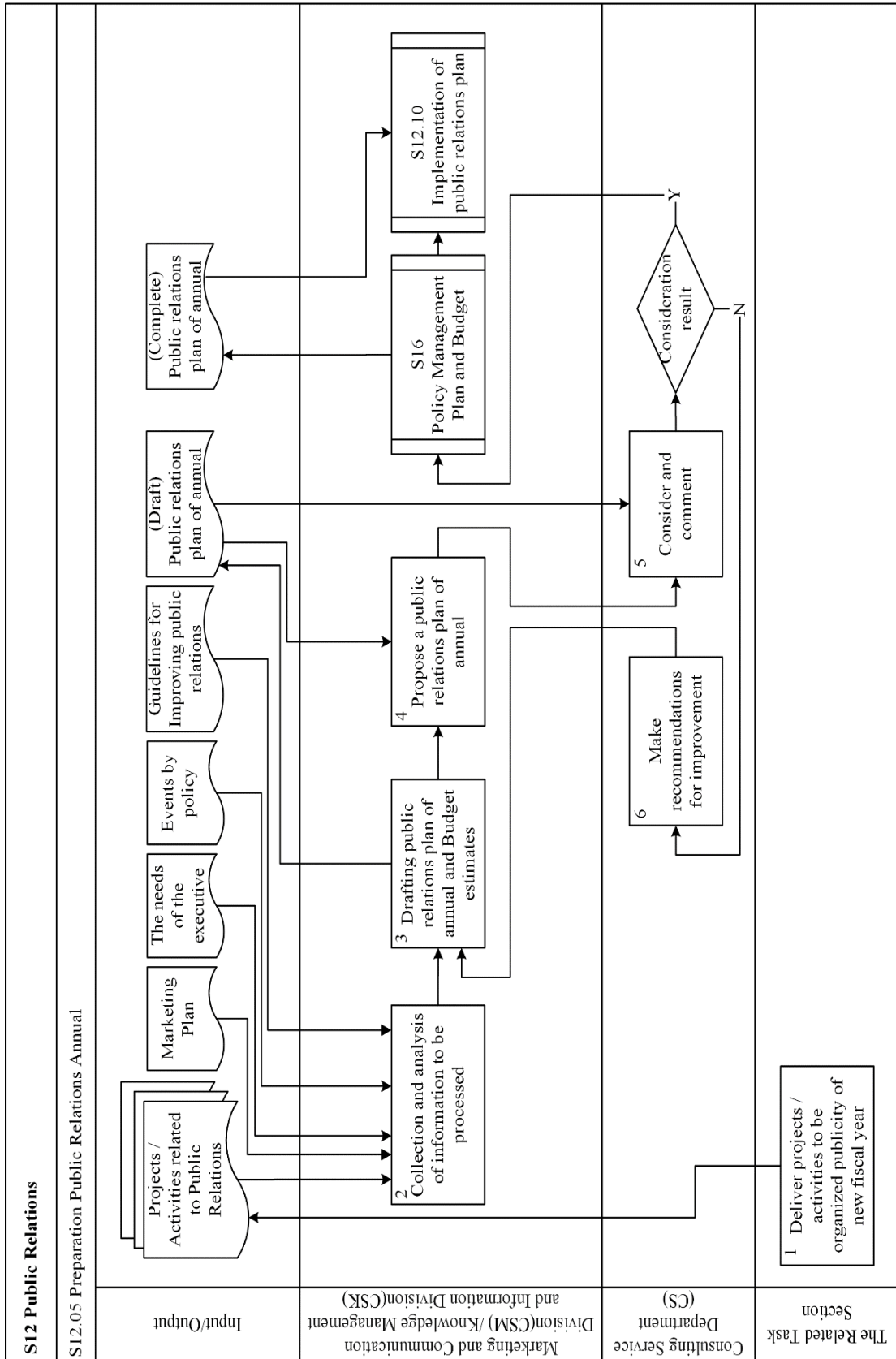


Figure 4.14 (S12.05) - Preparation of Public Relations Annual Diagram.

4.4.2 (S12.10) - Implementation of Public Relations' Plan

Implementation of a public relations plan covers the implementation of PR activities, special event, publicity, media with controlled media both and uncontrolled media. By implementation of the public relations activities, it is to inform its story, and persuade to acknowledge the papers detail, brochure, poster, and website. Activities is carried out to make activities more attractive to the target audience. Promotional and PR activities of the organization are given as contest/competition, grand opening, exhibits, seminar, public service, celebration, award day, promotion activities, road show, etc. The process will involve the detailed planning activities, the coordination of activities, and the preparation of promotional materials in the implementation process of a public relations plan. The promotion process of organization has to communicate with the target audience. Implementation of public relations plan with stakeholders is shown in Table 4.11, and workflow is shown in Figure 4.15.

Table 4.11 Stakeholder of Implementation of Public Relations Plan

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Responsibility	Marketing and Communication Division(CSM)	Marketing and Communication Division (CSM) is responsible for co-operation with Knowledge Management and Information Division (CSK). In the detailed planning and coordination, it is to perform the public relations activities, and takes a part in the process of promoting the event.
2	Responsibility	Knowledge Management and Information Division(CSK)	Marketing and Communication Division (CSM) is responsible for the co-operation with Knowledge Management and Information Division (CSK). In the implementation of activities, it is to manage the content of promotion and preparation of conduction with the appropriate media.

Table 4.11 (Cont.) Stakeholder of Implementation of Public Relations Plan

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
3	Responsibility	The Related task section	The Related task section is responsible for implementation in the work of content the content delivery of public relations is taken for the knowledge management and information Division (CSK) along with marketing and communication division (CSM)
4	- Accountability - Information	Manager of Consulting Service Department (CS)	Manager of Consulting Service Department (CS) is to approve a detailed plan of action to the public relation and information of public relations activities.

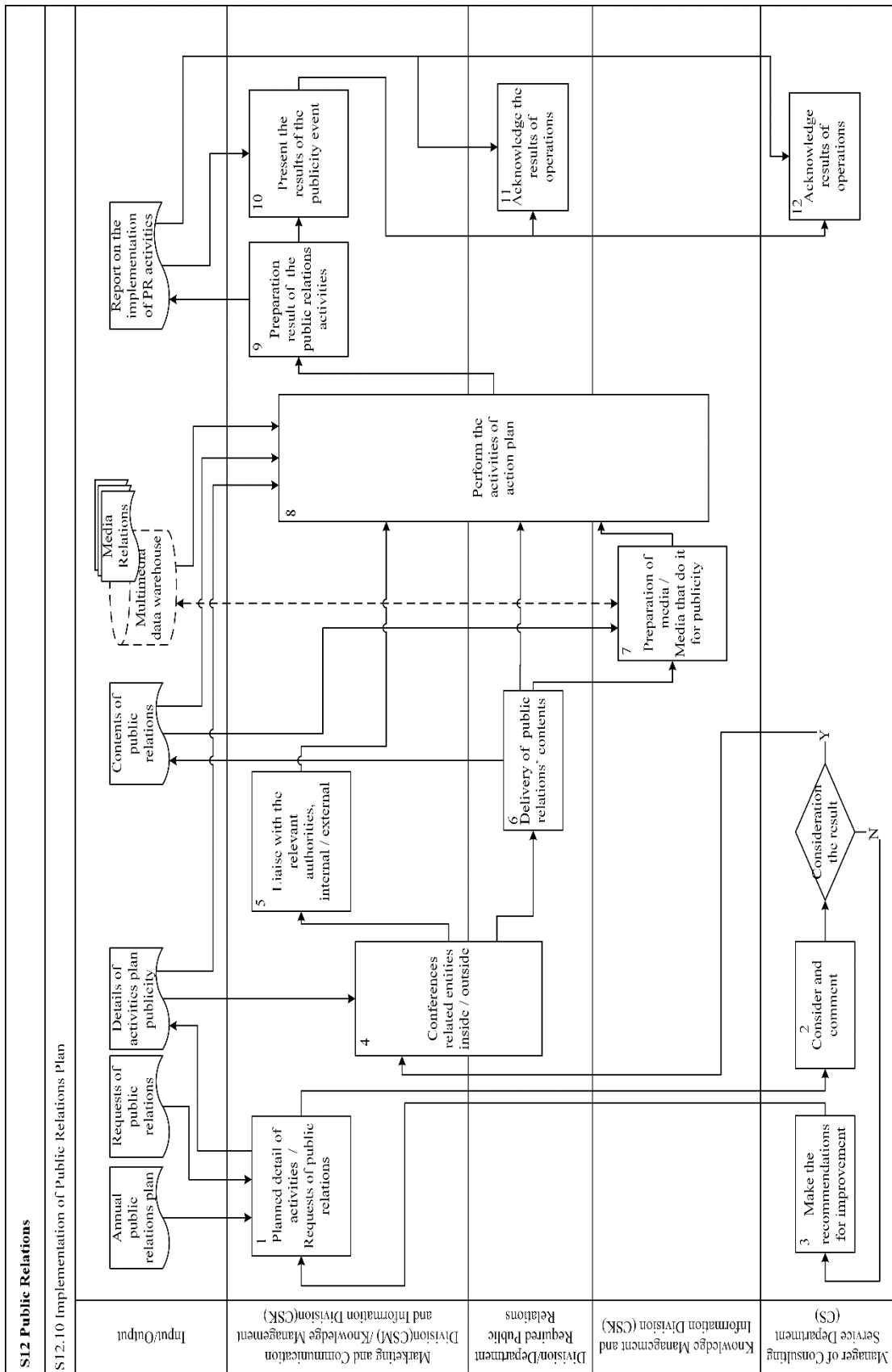


Figure 4.15 (S12.10) - Implementation of Public Relations' Plan Diagram.

4.5 Function-oriented BPI of Evaluation of Service Design

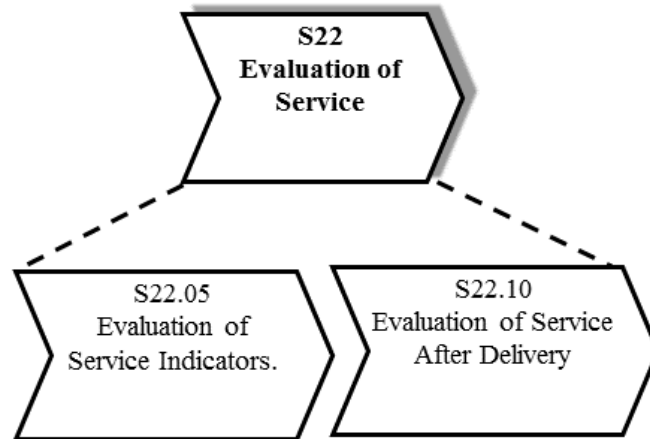


Figure 4.16 Process of Arrow Chart (Evaluation of Service).

The process is to get the information for performance and quality of the organization showing the results of the service. A KPI is used to measure the performance and evaluation of the operational aspects of the organization. The results of the measurement/evaluation are to demonstrate the efficiency of data, including the performance of the organizations or departments within an enterprise. The evaluation process of service consists of the evaluation of service indicators and the evaluation of service after delivery. The evaluation process of service consists of the evaluation of service indicators and the evaluation of service after delivery.

4.5.1 (S22.05) - Evaluation of Service Indicators

Evaluation process of service indicators is to obtain the results, including the number of customers, the effective customer service, the number of projects, the performance, the evaluation of the after-sales service in comparison with indicators targeted products/services in various fields such as the effectiveness, the quality of Service It covers a number of the collection, and the level of satisfaction in the management of the organization. Evaluation process of service indicators with stakeholders is shown in Table 4.12, and workflow is shown in Figure 4.17

Table 4.12 Stakeholder of Evaluation of Service Indicators.

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Support	Segment-related to indicators	Segment-related indicators are responsible for the preparation of reports to compare the performance metrics. The cause analysis and solutions are under the metric proposed strategy and action plan.
2	- Responsibility - Accountability	Policy and Strategy Department (PS)	Policy and Strategy Department (PS) serves to approve the plan, and is responsible for the implementation of the performance of all parties to process the management plans, policies, and budgets.

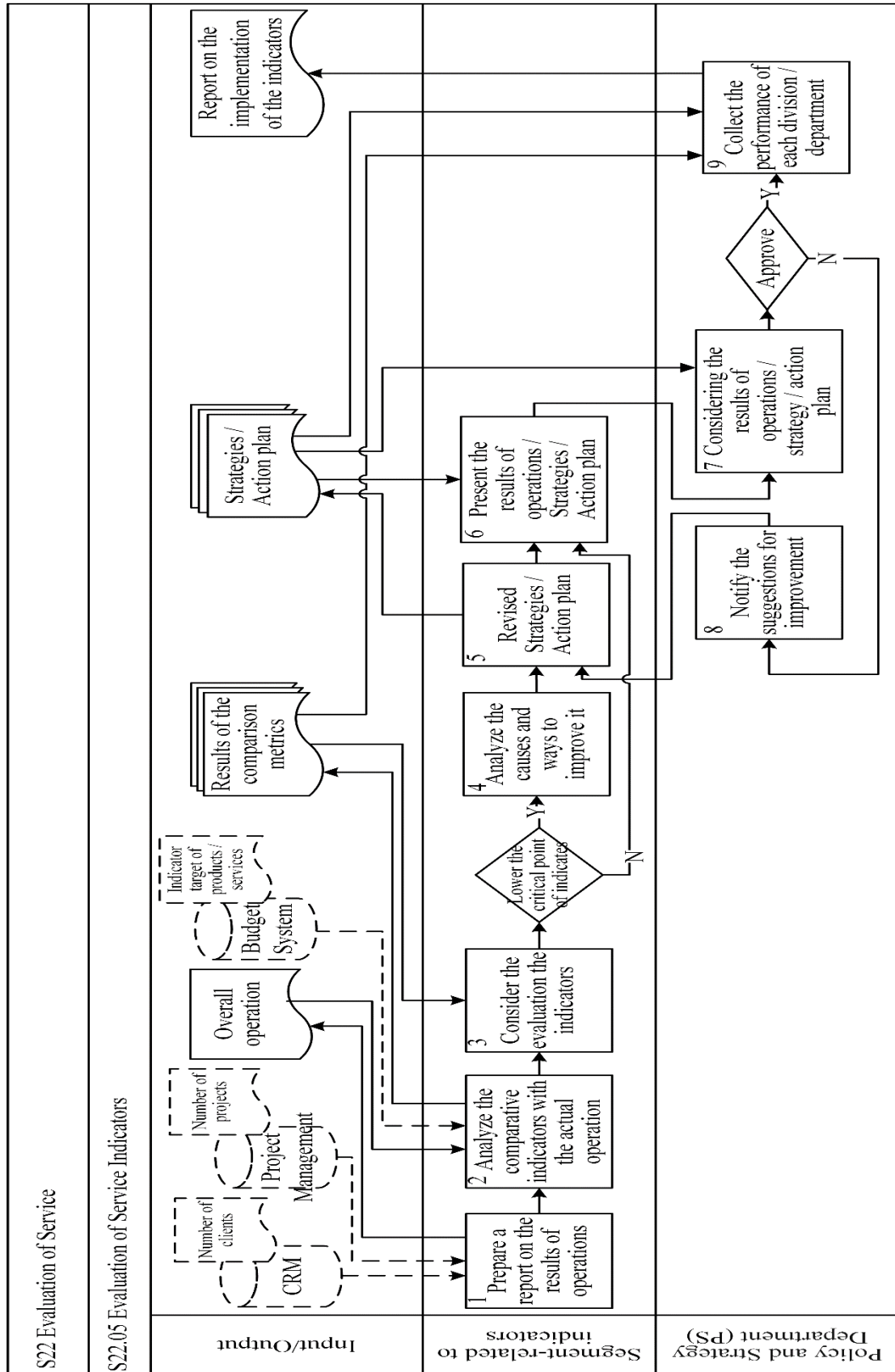


Figure 4.17 (S22.05) - Evaluation of Service Indicators Diagram.

4.5.2 (S22.10) Evaluation of Service after Delivery

The evaluation of service after delivery is a process allowing the evaluation of service immediately to acknowledge the result of the service organization after the installation is completed to build relationships with customers. The satisfaction of the customer feedback is used to improve the products and services of the organization. The Evaluation process of Service after Delivery with stakeholders is shown in Table 4.13, and workflow is shown in Figure 4.18.

Table 4.13 Stakeholder of Evaluation of Service after Delivery

No.	Duties and Responsibilities (RACI)	Stakeholder	Description
1	Support	Segment-related to indicators	Segment-related indicators are responsible for the preparation of reports to compare the performance metrics. The cause analysis and solutions are under the metric proposed strategy and action plan.
2	- Responsibility - Accountability	Policy and Strategy Department (PS)	Policy and Strategy Department (PS) serves the approved plan, and is responsible for the implementation of the performance of all parties to the process management plans, policies, and budgets.

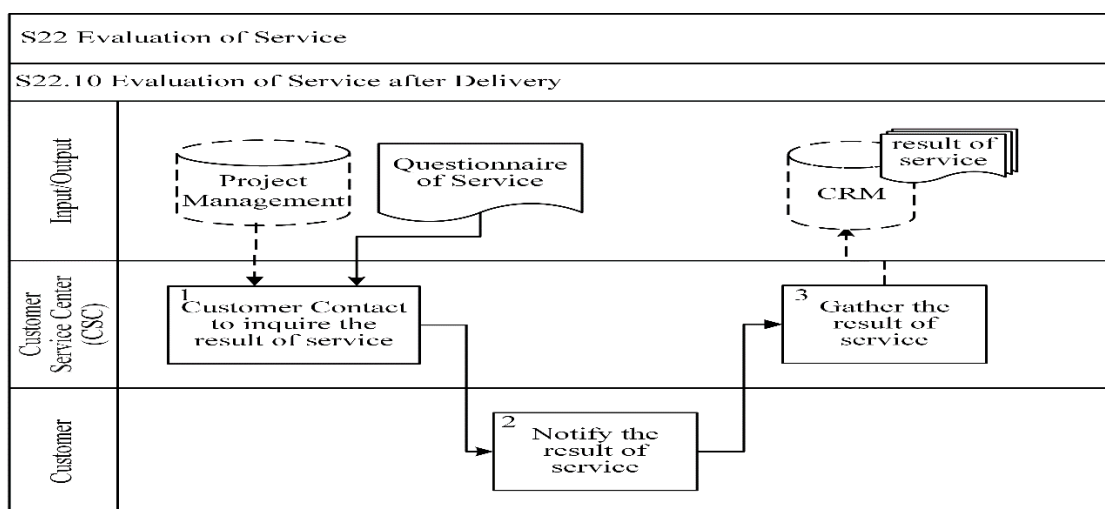


Figure 4.18 (S22.10) - Evaluation of Service after Delivery Diagram.

4.6 Evaluation

The evaluation results in qualitative research, the comparative satisfactions between the traditional actor-oriented process and the proposed function-oriented method collected from the Chief Information Officer (CIO) and the Chief Executive Officer (CEO), have commented that the new designed CRM business process is superior to the traditional one based on the guidelines defined in scope for best practice, given as:

1. Decreasing the time in operation,
2. Acknowledge the role of responsibilities,
3. Supporting the standard.
4. Consistency on Technology,
5. The accurate linked data,
6. Assisting in the planning and decision,
7. Reducing costs,
8. Increasing the organizational efficiency,
9. Achieving the goals organization,
10. Customer satisfaction in our products and services,
11. Better restructuring operation,
12. Being recognized within organization.

According to an assessment of satisfaction collected by CEO and CIO, a reorganization within an organization is difficult for individuals to accept the changes made. However, the rest parts are in quite high satisfaction, because the proposed method provides a great impact on the organization in all aspects of improvement.

CHAPTER V CONCLUSION

5.1 Conclusion

The organization's operations are divided into 35 separated processes, given as: 12 core processes and 23 support processes. In Figure 5.1, the 5 processes are directly related to Customer Relationship Management (CRM) as follows:

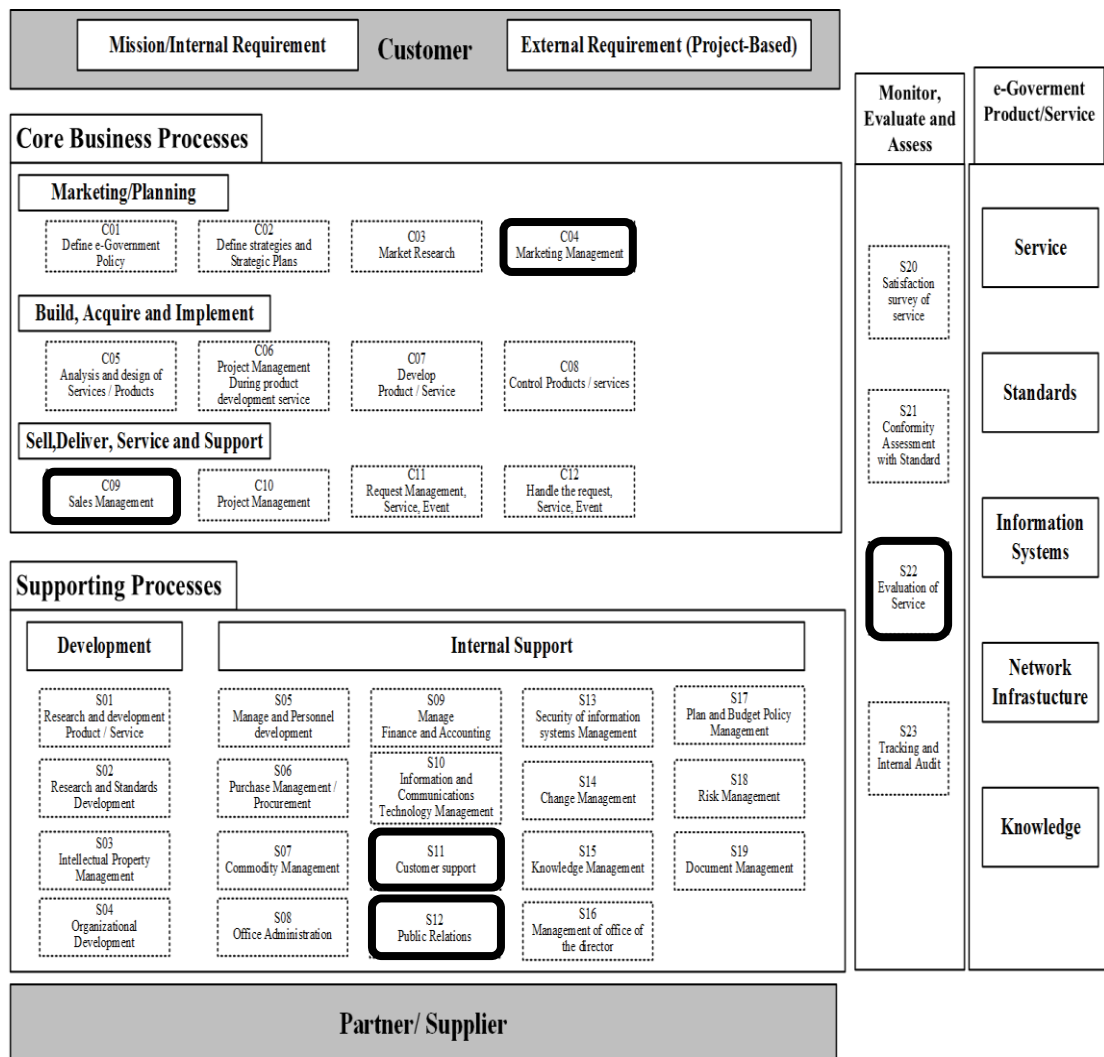


Figure 5.1 Core Processes in Study to CRM.

Customer Relationship Management (CRM) is required to improve the process, because it is the core business process that can propel the organization into the future. We propose the framework to improve the actor-oriented business process to be a function-oriented business flow. The improvement of business processes in CRM, namely function-oriented model, can help the organizations to respond the customer satisfaction. Therefore, it could lead to lower costs, better vision of the overall work process, clearer responsibility for division, better deployment of technology, and better recognition in international standards. This framework is confirmed by the CEO and CIO of the organization with the highest satisfaction levels.

In addition, the preparation of the Function-oriented BPI framework for CRM in large scale organization has been improved working process for more efficiency as follows:

1. C04 - Marketing Management

- There is increasing market research process, after adjustments. Both procedures and stakeholders are clearly prior written.
- A marketing plan has the comprehensive analysis and the framework for the implementation of the enterprise, enabling operations to better serve our customers.
- The process analysis and improvement of marketing plan after the implementation of the one term plan in order that the organization can adjust the plan on a timely basis. If an error occurs, it reduces the risk or damage. Besides, it can be used as guidelines to improve the marketing plan in order to prepare the marketing plan for the next year, accurately.
- The detail of products and service (Service Catalog) for the market conditions analysis would make it clearer.

2. C09 - Sales Management

- The sales management has the process of a comprehensive sales process, and those involved are clearly prior written.
- The database system for storing the data of customer target (Prospects) and current customers in CRM systems contains: data, the status of customer, liaison

with the client, operations with customers, and products/services to the management plan for the client.

- There are bringing data of seller or contractors from the procurement system (ERP) used to find a seller and contractors to preparation of technical proposals and prices.

- There is a consideration for the contracted service agreements with customers (Customer Level Agreement: CLA) in the process of contracting for the confidence and trust in the products/services of the organization.

- The use of electronic document is to request the use service an organization's products, which reduces the use of paper. Thus, it make the information on the electronic characteristics to use in the process to continue.

- An analysis of sales operations each of products/service and the comparison results of individually sales with the sale indicators is to improve the process of IT Consulting Division (CSI).

3. S11 - Customer Support (Manage the Customer Relation)

- There is a process to improve the up-to-date customer data in the CRM system.

- The CRM processes with workflows and those involved is clearly prior written.

- The CRM system is a database to store customer records, addresses, contact names, products used by customers, etc. CRM make it possible to manage the customer relationships effectively. Those involve the sharing and use the same database.

- The process works to build the continuous relationships with customers by planning and assigning multi-channels to build relationships with customers. There are projects to build relationships with customers, such as training seminars, expanding the scope of customer service, etc.

4. S12 Public Relations

- Public relations with workflows and those involved are clearly prior written.

- There are preparations of the public relations plan with a collection of information, such as: marketing plan, the requirements of the management, and policies of the organization's activities.
- There are the processes of summarizing and tracking the result the implementation of the public relations plans.
- There is a multimedia database systems and data warehouse to store pictures, video, and multimedia information in digital form for the purpose of implementation of public relations effectiveness. A multimedia and data warehouse of enterprise can be used together in sections and divisions of the organization.

5. S22 - Evaluation of Service

- The process evaluation of service relating the work process and stakeholders of work responsibilities is clearly written. Analysis of indicators compares with the results of process by pulling data from the system, such as: budget system, project management system, and CRM system. If result is lower the performance indicators, there are analysis and solutions to improve the strategy/action plan. This will enable organizations to improve the products/services and resolve the situation.
- A process evaluation of service delivery relating the work process and stakeholder of work responsibilities is clearly written. The survey of client service results after the delivery of services are used as the feedback to improve the service quality by authorities concerned.

5.2 Recommendation

Approach to improve the operation of the organization

1. The CRM keeps the service history of each product/services of customer to monitor the customer satisfaction after delivery products/service and following-up in order to improve the products/services of the organization to meet the needs of the customer.

2. Organizations should provide information necessary for the management for all divisions/departments to provide a shared database, such as: project management system and document management system.

3. All divisions/departments within organizations working together should have a meeting to understand the scope of work and responsibilities of each division/department.

4. Job, events, and workload occurring after the restructuring of organization management should clearly define the responsibilities, defining the purpose of the work, the preparation of job description, and improvement of the duplicate process.

Additional improvements after the process used in practice

1. A joint meeting between the division and parties involved in each process can be clarified and adapted to the roles and duties of each process.

2. Planning processes have been updated to use in practice together with a scheduled period of evaluation.

3. The organization should be conducted to verify the consistency of CRM in operation with the proposed work of the process.

4. Conditions should be determined to achieve clarity in the request of service.

REFERENCES

1. CaiLiang S, Bing H, QingBiao Z, Wenfei S. Design and Implementation of Customer Relationship Management System Based on Structured Object-Oriented Methodology. International Conference on Information Technology, Computer Engineering and Management Sciences (ICM); 2011 Sept: p. 390-393.
2. Agrawal G. K, Berg D. The Development of Services in Customer Relationship Management (CRM) Environment from 'Technology' Perspective. Journal of Service Science and Management. 2009;2(4):432-438.
3. Damij T, Damij N. Improvement of a Clinical Business Process. Computer Modeling and Simulation. Second UKSIM European Symposium on Computer Modeling and Simulation; 2008 Sept 8-10. p.305-310.
4. PAGE S. The Power of Business Process Improvement: 10 Simple Steps to Increase Effectiveness, Efficiency, and Adaptability: AMACOM; 2010.
5. Harrington J. Business Process Improvement: McGraw-Hill Education (India) Pvt Limited; 2005.
6. Raynus J. Improving Business Process Performance: Gain Agility, Create Value, and Achieve Success: CRC Press; 2011.
7. Cook S. Process Improvement: A Handbook for Managers: Gower; 1996.
8. Harrington HJ. Streamlined Process Improvement: McGraw-Hill Education; 2011.
9. Boutros T, Purdie T. The Process Improvement Handbook: A Blueprint for Managing Change and Increasing Organizational Performance: McGraw-Hill Education; 2013.
10. Stevens A, Management S. ITS Process Improvement Methodology (Methodology Overview). 2010. p. 1-14.
11. Michigan IUo. Methodology: Process Improvement. 2013.
12. Brandao R, Wynn M. Product Lifecycle Management Systems and Business Process Improvement; A Report on Case Study Research. Computing in the Global Information Technology. 2008; July 27 - Aug. 1: p.113-118.

13. Kumar V, Reinartz W. Customer Relationship Management: Concept, Strategy, and Tools: Springer; 2012.
14. Baran RJ, Galka RJ, Strunk DP. Principles of Customer Relationship Management: Thomson/South-Western; 2008.
15. Jawadekar WS. Management Information Systems: Text and Cases : a Global Digital Enterprise Perspective: McGraw Hill Education (India); 2013.
16. Buttle F. Customer Relationship Management: Concepts and Technologies: Butterworth-Heinemann; 2008.
17. Vieira A, Figueiredo S, da Silva MM. Using a CRM Approach for Implementing an Information System to Support ITIL. Quality of Information and Communications Technology (QUATIC). 2012 Eighth International Conference. 2012 3-6 Sept; 2012: p.178-181.
18. Cleveland B. The 12 Principles for Building Profitable Customer Relationship; 2014.
19. Beyadar H, Gardali K. The study of customer relationship management method. Application of Information and Communication Technologies (AICT), 2011 5th International Conference; 2011 12-14 Oct. 2011.
20. M. Sarafraz, Memarzade, editors. The paradigm of electronic customer relationship management (ECRM) in project management, customer retention. The first international Conference of Electronic Banking; 2007; Tehran.
21. Tavana A, Fili AS, Vaghari R, Kakouie S. Theoretical Models of Customer Relationship Management in Organizations. International Journal of Business and Behavioral Sciences. November 2013;3(11):63-70.
22. Philipp G, Susanne L, Gregor Z. Analysis of Techniques for Business Process Improvement. ECIS 2011. Helsinki(Finland): 2011
23. Abreu J, Martins PV, Fernandes S, Zacarias M. Business Processes Improvement on Maintenance Management: A Case Study. Procedia Technology. 2013;9(0):320-30.
24. Nasution WS, Albarda. Improvement of business process in order to manage the quality of information. ICT for Smart Society (ICISS), 2013 International Conference; 2013 June 13-14; Jakarta. IEEE; 2013. p.1-7.

25. Tao Z, Qingfu S, Changxin Z, Liaohua C. A four-dimensional framework for broad band business process improvement in HT Company. *Computers & Industrial Engineering*; 2009 July 6-9; Troyes. IEEE; 2009. p. 1160-1164.
26. Xuan X. Data Analysis of Customer Flow in Marketing Network. *Measuring Technology and Mechatronics Automation (ICMTMA)*. 2014 Sixth International Conference; 2014 Jan 10-11; Zhangjiajie. IEEE; p. 199 - 202.
27. Harej K, Horvat RV. Customer relationship management momentum for business improvement. *Information Technology Interfaces*. 2004 26th International Conference; 2004 June 7-10; Cavtat. IEEE; 2004. p. 107 - 111.

APPENDICES

APPENDIX A
COMPARISION BETWEEN ORIGINAL AND NEW JOB
DEPARTMENT/DIVISION

Original name and New name of The Department/Division

Original Department/Division	Abbreviation	New Department/Division	Abbreviation
Corporate Management & Administration Department	CMA	Corporate Efficiency Management Department	CM
Finance and Accounting Division	CMAF	Finance and Accounting Division	CMF
Human Resources Management Division	CMAH	Human Resources Management Division	CMH
General Administration Division	CMAG	General Administration Division	CMG
Corporate Quality Development & Risk Management Division	CMAD	Corporate Development Division	CMD
Legal Division	CMAL	Procurement Division	CMP
Promotion & Technology Transfer Department	PTD	Policy and Strategy Department	PS
e-Government Development Promotion Division	PTDP	e-Government Policy Division	PSP
Technology Transfer Divisions	PTDT	Strategy Division	PSS
Public Private Partnership Development Division	PTDD	Coordination and Cooperation Division	PSC
		Risk Management Division	PSR

Original Department/Division	Abbreviation	New Department/Division	Abbreviation
e-Government Consulting Department	GCD	Consulting Service Department	CS
		Business Development Division	CSB
		Marketing and Communication Division	CSM
		Knowledge Management and Information Division	CSK
IT Consulting Division	GCDC	IT Consulting Division	CSI
e-Government Service Consulting Division	GCDS		
IT Project Management Division	GCDP	Project Management Division	CSP
		Technology Transfer Division	CST
		Customer Service Center	CSC
Government Enterprise Architecture & Policy Department	GAP	Innovation Department	IN
e-Government Policy Development Division	GAPP	Research and Development Division	INR
e-Government Security Development Division	GAPS	Architecture and Prototype Division	INA
e-Government System Standard Division	GAPG	Standard Division	INS
Government Application Development Department	GAD	Application Development Management Department	AD
Application Development Division 1	GADD#1	Application Development Division1	AD1
Application Development Division 2	GADD#2	Application Development Division2	AD2
Quality Assurance Division	GADQ	Application Management Division	ADQ
		Quality Assurance Division	ADM

Original Department/Division	Abbreviation	New Department/Division	Abbreviation
IT Intelligence Operations Department	ITO	Engineering and Operations Department	EN
IT Security Division	ITOS	IT Security Division	ENS
IT Infrastructure Service Division	ITOI	IT Infrastructure Service Division	ENI
IT Application Service Division	ITOA	IT System Service Division	ENM
IT Support & Operations Division	ITOP	Technology Support & Service Division	ENT
Office of the Director	OS	Office of the Director	OD
		Executive Secretary Division	ODS
		Executive Secretary Division	ODI
		Legal Division	ODL

APPENDIX B
CONFERENCE PAPER IN 2015 INTERNATIONAL
CONFERENCE ON INFORMATION TECHNOLOGY

**Function-oriented Business Process
Improvement Framework for Customer
Relationship Management Section in Large
Scale Organization**

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Abstract

Customer Relationship Management (CRM) is critical and essential to such organization, especially to the large scale organization since its involved customers may be covered to the people, citizen, organization or government sections. Anyway, according to the nature and culture of the traditional job design, their business processes are costly and inconsistent because of their actor (or department) oriented design which leads to the difficulties in improvements. This paper proposes an idea of improving the business processes, based on Business Process Improvement (BPI) concept in function-oriented, to solve the existing work problems and suggest the possible solution for the future to achieve the organization goal. The evaluation was done by both the officer and the executive.

Keywords: Function-oriented, Business Process Improvement, Customer Relationship Management

1. Introduction

Business Process Improvement (BPI) [1] is a method of designing organizational adjustment which continues to increase operational efficiency by focusing on improving the business taken from analysis of the problem or finding of the real cause. An intermediate information collecting is used in the process of adjusting in current work or current data model into the new one. It also minimizes the loss of jobs that is worthless in the organization and increases yield of products and services. There are some factors involved in this consideration such as the inability of customers' demands response, high operating costs, operational delays, personnel lack of knowledge and expertise, etc. Additionally, there are some external factors such as high competition, increasing in competitors, changing in economic conditions, new technology, and the requirements of the client and the organization. Thus, improving of business processes is important [1] because the improvements aim to simplify the procedure for non-critical tasks. The processes

with the same or strongly similar procedures are combined into a single one, rated by comparative rules with updating methods of working to be more convenient such as a one-stop service. Technology usage assists in managing ongoing operational to be less time consuming. Saving resources in managing, e.g. personnel, cost, time, and equipment management, operates in environments that change. According to the Business Process Improvement (BPI), there are many agencies use the customer relationship management involves their works.

Customer Relationship Management (CRM) [2] in most of organizations recognizes the importance of developing a client relationship management system to help in managing of customer database belonging to the agency for the purpose of management of the project in the basis of the mission in such agency. Monitoring and evaluation of the analytical data is reported which makes the information is accurately accessible. Therefore, the CRM is managed by various involved agencies. For example, the system could be the centre system, customer service system, marketing system, sales system, etc.

In the present, most organizations have a pursuit profit but they are also has internal problems, one of those is characterized by a non-profit selling products and services, mostly with government support. Additional factors are [3], for example, making less sales management, including complicated steps in the sale process, building a barrier in the workplace, requiring documents are in multiple formats, long duration working, personal confusing, and lacking of understanding in job roles and responsibilities. Therefore, BPI, coupled with the development of customer relationship management system, is an interest domain to be applied. Additionally, some of CRM driven organizations designed the current process flows based on the pre-defined and established section complied with an organization structure. Each business process is bound with specific section (or department). This designing methodology is costly and inconsistent because their actor-oriented design may leads to the difficulties in improvements.

This paper proposes a designing framework for Business Process Improvement (BPI) in customer relationship management systems (CRM) by function-oriented approach and also its evaluation. A case study example is an e-government company with a mission to develop a comprehensive operational, management of infrastructure, to survey, to research, and to analyze problems and success factors. These missions involve the consultation services, technical support and training to enhance the skills, knowledge and the dissemination of information related under the partnership with government agencies and the private sector by considering covers three aspects: economic, social, and environmental, for examples, budget savings, decrease the operations of government, promote interaction between government and citizens.

The rest of this paper is organized as follows. In section 2, we describe a concept and features of CRM. Section 3 presents the general concepts of BPI. Section 4 describes the proposed framework and demonstrated example case study. Consequently, the evaluation, discussion and conclusion are described in latter sections respectively.

2. Customer Relationship Management (CRM)

2.1 Concepts and Principles

The CRM is consisted of some concepts including: learning about ongoing customer, retaining the customers, satisfying the demands of customers and offer to fulfil them, dealing with different customers, and personally interacting with customers. Building customer relationships increases value for both clients and organization which is such a compelling strategy. When the CRM is executed properly, the focus on building relationships and brand loyalty is a “win-win” for customers and the organization [4]. This strategy takes a holistic view of customers and consolidates information from across the organization, regardless of geography, department, function, contact channel, social community, or product line. It usually focuses on revenue and retention more than on reducing costs. It also enables information sharing and interaction across the organization and creates business rules to drive all customer relationship management decisions and automation. Consequently the effective management of customer relationships is a way of doing business, not just a technology project which is only an enabler [5]. The objectives of the CRM [6][7] could be included identifying new opportunities, reducing missed opportunities reducing customer defection, improving customer service, enhancing appearance of organization, storing of organization information, and reinventing marketing.

2.2 Feature of CRM

The key features of a CRM system, as demonstrated in Figure 1, which deliver positive customer experience are usability, flexibility, high performance, and scalability [8]. CRM should be flexible enough to stay in touch with different users, reflect different requirements in different industries and be accessible to external or internal users. Furthermore, CRM should work over any communication channel and must integrate other systems to provide a single view of, and for the users [9].

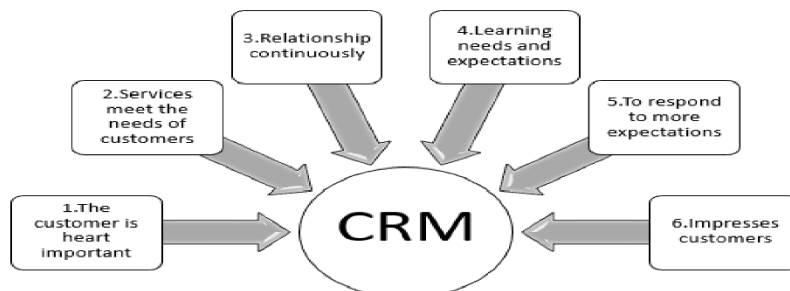


Fig. 1: Feature of CRM

3. Business Process Improvement (BPI)

3.1 Phase of Business Process Improvement (BPI)



Fig. 2: Business Process Improvement Methodology.

As shown in Figure 2, the general procedures of BPI [10] could be divided in phases as follow:

Scope Phase - The scope of the project in terms of time, costs, resource estimate includes an understanding of stakeholders and customers.

Document and Analyze phase - This phase refers to documenting the implementation and analysis of current conditions. Disclosure of operation should be revised, to identify roles and responsibilities within the organization with understanding.

Redesign Phase - To gear to the goals and objectives of the new design have to simulate and evaluate for the project management, monitoring, integration entail, and analyzing the terms and costs.

Implement Phase - This phase is to define scope and the procedure that have been approved for compliance with the appropriate procedures to implement process improvements.

Operate Phase - The operate phase represents the day-to-day management of the new or redesigned process [11]. To ensure the operation, the procedures are followed: steps in the preparation of the audit plan, data collection and establish a monitoring process to monitor, analysis, and finally a conclusion [12].

Review and Evaluate Phase – This phase is to monitor and evaluate period into improvement by identifying and complying the indicators in the assessment against goals and objectives. This will enable stakeholders and process owners to decide whether to continue or to improve further.

4. Function-oriented BPI framework

This paper proposes a framework of applying the function-oriented Business Process Improvement (BPI) with the agency on customer relationship management sections, scoped to the sale management system as case study. The function-oriented BPI refers the function-oriented BPI refers to processes or data

flow is an improvement of the traditional actor-oriented business process. The function oriented BPI is represented in the form of a process arrow chart of the work conveys. Workflows hierarchically until the end of the process Flow of work to implement a swim-lane diagram have input data, output and functions relate work to the clearly, but the actor-oriented is the traditional model as shown in Figure 3. It has the disadvantage of having a beginning and an ending are not connected to the work that occurs in the process of implementation and cannot be seen an overview a processes and sub-processes will shows only the tasks and workflows. An overview of the CRM in the selected organization is shown in Figure 4.

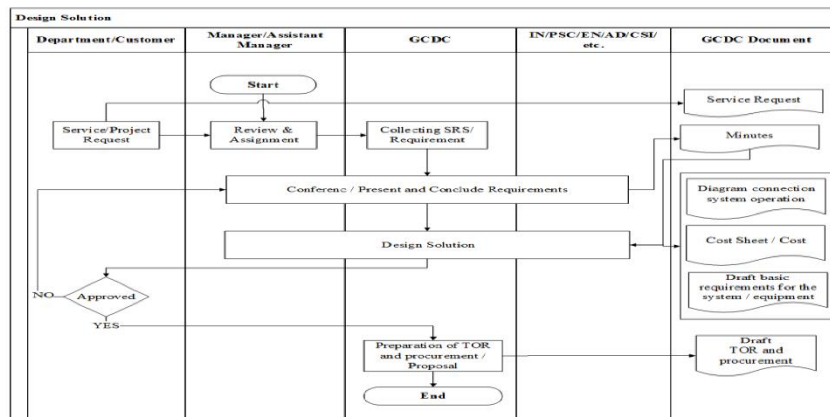


Fig.3: Example of actor-oriented (Process of solution designing)

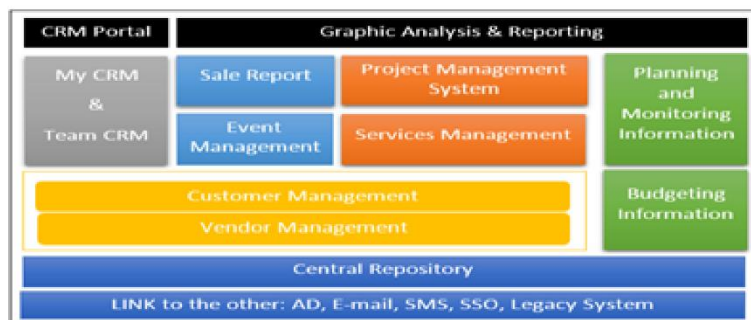


Fig.4: Customer Relationship Management System Overview

Therefore, the study has to clarify the source, the review process, and the structure of the organization for preparing of the business process and business flowchart. Analyses the design process and the forms that must be used in each process are as follows:

Step 1: Project Plan - Schedule of meetings, interviews, and workshops.

Step 2: Study current Status of the organization and requirements using policies, goals, vision, strategy, mission, operational processes, structure and functions of the organization, products and services, and other related operations. This step is to comply with the implementation of the new customer relationship management, named as “*As-Is Analysis*” which consists of guidelines for the implementation project management, data collection and needs, development of architectural projects, commercial development, business intelligence development, web portal development and linkage to other systems.

Step 3: Analyze the operational goals of the organization (business goals) and currently core business process and provide the suggestions to improve the process by comparing with international standards. Then, Prepare and present operational process redesign (*To-Be Process*) by the mapping process (Business Flowchart) in accordance with the policy and vision. The compliance with various standards and opportunities to improve processes to increase operational efficiency by providing a form that used in the process of CRM systems including assign responsibility for each process.

Step 4: The preparation of a To-Be process form have to be presented to the responsible parties within the organization to consider the comments and updates, but the new designed process must be trained for practitioners within the organization.

Step 5: Track execution, evaluate, and recommend how to improve customer relationship management in the operation of the organization.

Consequently, this part shows how to design function-oriented BPI to a CRM sections for a sales management process, for example, in type agencies has to pursuit of profit and nonprofit of sale, as shown in Figure 5. The arrow chart diagram shown in this Figure was designed by the concept of function-oriented which emphasizes on the main process and its sub-processes and slightly neglects the actor (or department) that involved to the jobs. This concept typically shows the more obvious perspective of the selected process.



Fig.5: Process Arrow Chart (Sale Management Process)

According to the examples, each workflow process can be represented by Swim-lane Diagram on function-oriented. As part of the sales operation, it is used to improve the process of customer relationship management, as shown in Figure

6. This diagram is extended from the arrow chart diagram with the specific the involved stakeholder, a separated input/output lane which facilitate for analyze and understand.

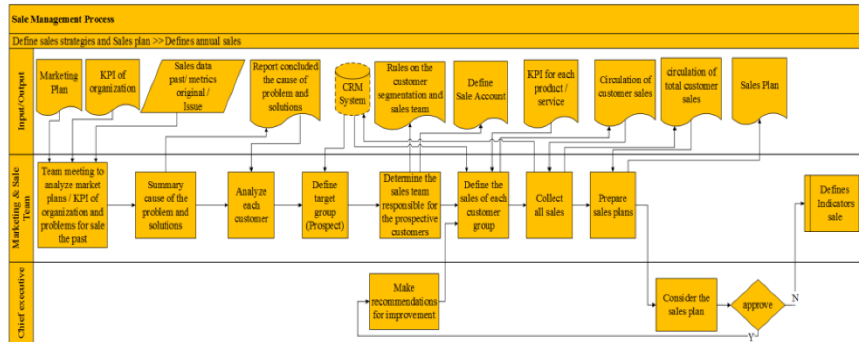


Fig. 6: Swim-lane Diagram of Defines annual sale sub-process

5. Evaluation and discussion

According to the evaluation results shown in Table 1, the comparative satisfaction between the traditional actor-oriented process and the proposed function-oriented method collected from the Chief Information Officer (CIO) and the Chief Executive Officer (CEO) have commented on the new designed CRM business process is superior to the traditional one based on the guidelines defined in scope best practice. In Table 1, the symbol ‘I’ and ‘E’ refer to the opinion of the CIO and CEO respectively.

Table 1: Satisfaction rating of proposed method (function-oriented)

GUIDELINE	Low	Medium	High
1. Decrease the time in operation		I/E	
2. Know Role Responsibilities			I/E
3. Support with Standard			I/E
4. Consistency on Technology	I	E	
5. Linked data is accurate		I	E
6. Assist in the planning and decision		I/E	
7. Reduce costs		I	E
8. Increase organizational efficiency			I/E
9. Achieve the goals organization		I	E
10. Customer satisfaction in our products and services.			I/E
11. Better restructuring operation		E	I
12. Recognized within organization	E	I	

According to an assessment of satisfaction collected by CEO and CIO with the scoring scale: Low-Medium-High (1-2-3), an average score is 2.42/3.00 point. A recognizing within an organization is difficult individuals within an organization to accept the changes made. However, the rest parts are in quite high satisfaction because the proposed method provides a great impact on the organization in all aspects of improving.

6. Conclusions

Customer Relationship Management (CRM) is required to improve the process because it is the core business process that can propel the organization into the future. We proposed a framework to improve the actor-oriented business process to be a function-oriented business flow. The improvement of business processes in customer relationship management is a new model called function-oriented, can help organizations responding to customer satisfaction which could lead to lower costs, view the overall work process, a clear division of responsibility, deploy the technology is better and recognized in international standards even more. This framework is confirmed by CEO and CIO of the organization with the high satisfaction levels.

References

- [1] T. N. Damij, "Improvement of a Clinical Business Process," *Computer Modeling and Simulation, 2008. EMS '08. Second UKSIM European Symposium*, pp.305-310, 8-10 Sept. 2008.
- [2] S. CaiLiang, H. Bing, Z. QingBiao, and S. Wenfei, "Design and Implementation of Customer Relationship Management System Based on Structured Object-Oriented Methodology," *Information Technology, Computer Engineering and Management Sciences (ICM), 2011 International Conference on*, vol.3, pp.390,393, 24-25 Sept. 2011.
- [3] G. K. Agrawal, B. Daniel, "The Development of Services in Customer Relationship Management (CRM) Environment from Technology Perspective," *J. Service Science & Management*, no. 2, pp.432-438, 21 Aug. 2009.
- [4] B. Cleveland, "The 12 Principles for Building Profitable Customer Relationship" 2014.
- [5] H. Beyadar, K. Gardali, "The study of customer relationship management method," *Application of Information and Communication Technologies (AICT), 2011 5th International Conference on*, pp.1-4, 12-14 Oct. 2011.
- [6] M. Sarafraz, Memarzade, "The paradigm of electronic customer relationship management (ECRM) in project management, customer retention," *The first international Conference of Electronic Banking, Tehran, 2007*.
- [7] T. A. Feizbakhsh, F. Saeed, T. Alireza, V. Reza, and K. Saed, "Theoretical Model of Customer Relationship Management in Organizations," *International Journal of Business and Behavioral Sciences on*, vol.3, no.11, pp.63-70, Nov. 2013.
- [8] B. Francis, "Customer Relationship Management: Concepts and Technologies," 2nd edn. Elsevier Ltd, 2009.
- [9] A. Vieira, S. Figueiredo, "Using a CRM Approach for Implementing an Information System to Support ITIL," *Quality of Information and Communications Technology (QUATIC), 2012 Eighth International Conference on the*, pp.178,181, 3-6 Sept. 2012.
- [10] S. Andrea, "ITS Process Improvement Methodology (Methodology Overview)," 1, 5 Nov. 2010.
- [11] ITS University of Michigan "Methodology: Process Improvement," 2013.
- [12] R. Brandao, M Wynn, "Product Lifecycle Management Systems and Business Process Improvement – A Report on Case Study Research," *Computing in the Global Information Technology, 2008. ICCGI '08. The Third International Multi-Conference on*, pp.113-118, 27 July 2008-1 Aug. 2008.

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