



**CENTRALIZATION PROCESS IN
PROCUREMENT OF MAINTENANCE, REPAIR,
AND OPERATIONS (MRO) ITEMS**

Case company X

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<p>Abstract:</p> <p>This thesis documents the process of a centralization project for Maintenance, Repair and Operations (MRO) procurement and the incentives behind the project, as well as discusses the problem attributes, and recommends solutions on how to improve the operational sides of the project in company X.</p> <p>The research questions seek answers for a particular and standardized process to implement the centralization procurement process for MRO items, the reason why MRO items, especially the packaging materials and safety gloves, are chosen to change from decentralized to centralized procurement. Moreover, the research questions address whether there is any problem occurring during the project implementation and how company X can handle this.</p> <p>The research method uses the case study approach including qualitative data usage. The primary sources are collected through the transcribed interviews with key project members in company X, observations from meetings as well as documents about the company procurement guidelines and process. The secondary sources are collected from both written and electronic sources.</p> <p>The study concludes with successful and standardized guidelines to conduct the centralization of MRO procurement as a best practice. The whole process is covered by four main phases: preparation, planning, execution and management. These four main phases are supported by empirical findings and positive end-results, together with theoretical evidence to prove the creditable and applicable of supporting mechanisms for the centralized MRO procurement process.</p>	
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Table of Contents

- 1. INTRODUCTION..... 6
 - 1.1 Research aim 7
 - 1.2 Research questions 7
 - 1.3 Focus and limitations 7
 - 1.5 Structure of the study 8
- 2. RESEARCH METHOD 9
 - 2.1 Research approach..... 9
 - 2.2 Data collection..... 10
 - 2.3 Data analysis..... 11
- 3. PROCUREMENT 12
 - 3.1 What is procurement? 12
 - 3.2 Procurement role in organization 14
 - 3.3 Procurement categorization 15
 - 3.3.1 Direct procurement and indirect procurement 15
 - 3.3.2 Indirect procurement of MRO items..... 15
- 4. CENTRALIZED PROCUREMENT 17
 - 4.1 Centralization and decentralization in procurement 17
 - 4.2 When to centralize 20
 - 4.4 Best practices in effective procurement management..... 23
 - 4.4.1 Spending analysis 23
 - 4.4.2 Mitigate maverick buying 24
 - 4.5 Supporting tools for centralizing procurement of MRO items 25
 - 4.5.1 E-procurement 25

4.6.2	Extended MRO procure-to-pay process	27
4.7	How to overcome pitfalls of procurement model transformation	29
4.7.1	Supplier management	29
4.7.2	Internal customer management:.....	31
5.	CASE ANALYSIS AND PROJECT IMPLEMENTATION PROCESS.....	32
5.1	Case company and the project:.....	32
5.2	Planning phase	36
5.2.1	Considerations for centralization decision in MRO procurement.....	36
5.2.2	Decentralized MRO procurement model before centralization	38
5.3	Preparation phase.....	40
5.3.1	Spending analysis for packaging materials and safety gloves	40
5.3.2	Extract spending data history	41
5.3.3	Categorize and analyze the spending data	42
5.4	Execution phase:.....	43
5.4.2	Supplier selection	44
5.4.3	Procure-to-pay process implementation.....	46
5.4.4	E-procurement installation.....	48
5.5	Project operational problems and project management	50
5.6	Summary of the project results.....	55
6.	Discussion	56
7.	Conclusion.....	58
	LIST OF REFERENCES	59
	APPENDIX 1 : INTERVIEW TRANSCRIBED.....	1
	APPENDIX 2: INTERVIEW TRANSCRIBED.....	3
	APPENDIX 3: INTERVIEW TRANSCRIBED.....	4

List of Abbreviations

MRO: Maintenance, Repair and Operations– stands for indirect purchased materials used for production such as chemicals and lubricants, industrial supplies such as packaging materials, health and safety supplies such as safety gloves.

ORM: Operating Resource Management – stands for indirect purchased materials used for office supplies and business needs such as office products and travel services.

SKU: Stock Keeping Unit – stands for inventory stock which is assigned with an identification code to control and manage its inventory level.

SRM: Supplier Relationship Management - stands for a strategic approach in procurement to leverage the relationship with suppliers so as to gain long-term cooperation and strengthen the negotiation power.

ERP: Enterprise Resource Planning – stands for a business-management software that integrate and synchronize all the cross-functional unit's database as well as automate the back office functions such as logistics and procurement.

KPI: Key Performance Indicators – stands for a measurable matrix to evaluate the actual performance in comparison with the targeted goal.

PO: Purchase Order – stands for a commercial document issued by a buyer to a seller, indicating the purchased items with ordered quantity, and total net value.

SAP: Systems, Applications and Products – stands for a popular data management program that is well known for ERP.

1. INTRODUCTION

Procurement is the action of acquiring goods and services. The majority of manufacturing firms spend approximately 60% of their sales revenue on procurement materials and services (Krajewski et al., 2007). Therefore, more and more attention has been directed to procurement efficiency to restructure the procurement model for achieving an optimal and more cost-efficient procurement process. It has been realized by many firms, especially in the manufacturing industry, that procurement is an integral node along the supply chain. The global demand for cost efficiency has resulted in an increase in the centralization of the procurement process. Technically, centralized procurement applies to the scattered procurement volumes with unfavourable costs, and it puts the procurement function in the central role to direct the transactions across units. It is widely accepted that the improved supply chain transparency through centralization will lead to higher business performance (Pagell, 2004). Procurement literature has presented the synergy benefits from centralized procurement by bundling large-volume purchased items to get price discounts from suppliers and mitigate overlapping purchases. This study researches a case study of company X, a manufacturer, which can early spot the operational and cost-related problems in procurement of the Maintenance, Repair and Operation (MRO) products. The author participated in the project when company X determined to change the MRO procurement of packaging materials and safety gloves from decentralization to centralization in order to improve profitability and achieve organizational synergy. Consequently, company X followed a step-by-step project to re-engineer their procurement strategy for two most suitable MRO items before applying the process to other MRO items. The centralization project was conducted through a process under the guidance of top procurement managers together with active participation of key stakeholders who are involved in the procurement process of MRO items.

1.1 Research aim

The main objective of the research is to illustrate and evaluate the centralization process for indirect procurement of MRO items by applying the theoretical guidelines to the real process. The ultimate goal of the research is to encompass all phases of a strategic project implementation, including decision making (preparation), planning, execution, and project management. An additional and complimentary goal is to reveal why centralization procurement should be used for MRO items but not with other indirect product categories. Last but not least, the strategic goal is to recommend operational tactics to effectively manage and resolve challenges that are confronted during the process implementation.

1.2 Research questions

The research attempts to answer the main question, which is

- How is the centralization project for indirect procurement of MRO items implemented in company X?

While finding the answer for this main research question, the writing also addresses the two complimentary questions below:

- Why company X chooses MRO items to implement this project on?
- What operational problems occurred during the project implementation and how did company X resolve them?

1.3 Focus and limitations

The focus of this study is towards operational perspectives of the project and excludes any specific financial and insightful tactical analysis. The type of procurement involved in this thesis is indirect procurement, the acquisition of indirect goods. More specifically, the purchased item being discussed is the Maintenance,

Repairing and Operation (MRO) item, but focus is exclusively on the operation-related items, consisting of packaging materials and safety working gloves. It neither reveals specific information such as which vendor is the final winner in the centralization purchasing project, nor how effectively the e-procurement system performs with statistical evidence showing financial improvement. Due to the scope of this thesis, targeting the procurement expertise, the terms and definitions used in this paper are chosen selectively according to the context of this case study. Last but not least, since company X and the interviewees did not want to reveal their identities due to the confidential issues and compliance policy, they wanted to remain anonymous in this thesis.

1.5 Structure of the study

The thesis's body is composed of two parts which are literature theories and case study discussion. The theoretical framework is divided into two smaller sections. The first one is about general concepts relating to procurement, such as definitions, impacts and classifications. The second part focuses on centralization in procurement (centralized versus decentralized) by showing the superior advantage of centralization against the other. Moreover, the theory also highlights the challenges that decentralized procurement poses on MRO items. As a result, the theory leads to major considerations about when to centralize indirect procurement and recommends some supporting and management tools which help to successfully carry out and effectively mitigate supply chain risks from the centralization model implementation. Specifically, the second theoretical part is emphasized more deeply and hence, more dominant. All the theories and references aim at providing supportive evidence for the case study discussion section.

Following the theoretical framework is the case study discussion. This section reveals answers to three research questions by analyzing the collected primary data and arranged them in a sequential order process. It begins with the preparation

phase which explains why MRO items are chosen to convert from a decentralized to centralized procurement model. After that, the main part of the process (preparation and execution) is illustrated to show how the spending analysis, supporting tools, and complimentary process are installed and well integrated with each other in order to perform the project. The final step discusses what problems occur during the process and how the company can figure out the solutions through project management to overcome the shortcomings.

Finally, the primary and secondary data are presented, the author discusses and evaluates the centralization project. Then the discussion part addresses the research questions and reflects how the primary data correlates with secondary data to deliver the results and thus satisfy the research objectives. Lastly, the conclusion part presents the broader implication of the findings and highlights the remaining unanswered questions that the author thinks will interest future researchers.

2. RESEARCH METHOD

In this chapter, the research method used in this paper is presented. This thesis is written in the form of a case study that involves academic sources (text books) and reliable written sources from business journals and articles. The first chapter begins with the research approach, then describes how primary and secondary data was collected and finally, and finally how the research results were analyzed and interpreted.

2.1 Research approach

The research approach used in this thesis is a case study approach including qualitative data usage. Eisenhardt (1989, 532-50) demonstrated that a case study consists of and integrates with mixing data sources from interviews, observations or

questionnaire. Most recent researches highlight that case study is a useful and practical tool to gain effective learning outputs under a specific organizational situation.

Again, there are two types of data are collected for analysis. Whilst the collection of secondary data forms the principal foundation and implication in relation to the case prospects, the discussion of primary (empirical) data from company X illustrates the real business situation, and how collected data is constructed consistently. All data gathered, after fulfilling the research questions, is concluded in association with the theory formerly used.

2.2 Data collection

The materials covered in the writing consist of both primary and secondary data to match the purpose of the thesis. The primary data was collected from some confidential internal documents about company X's procurement process, face-to-face interviews as well as from author's observations and empirical findings from a thorough participation in this project. The secondary data is the theoretical reviews from reliable sources like articles, journals and textbooks through online search engines and school library.

Since the author did aim at using this project case of company X as thesis materials, all the primary data, therefore, was collected from the time of initializing the project.

- Observations from conference phone call on 15th May 2015 between Project Leader and Project Manager (Lead buyers of packaging materials and safety clothes in Thailand): the meeting discussed the detailed preparation and execution process.

- Face-to-face interview on 1st June 2015, with Project Leader (Assistant Purchasing Manager for Packaging items and Safety Clothes): open questions relating the project's objectives, process, and structure.
- Observations from meeting on 23rd June 2015 among key stakeholders and project leader: announcements for new procurement process and assigned responsible tasks.
- Face-to-face interview on 3rd August 2015, with Logistic planner: open questions about the involvement and integration between Logistics department and the project.
- Face-to-face interview on 24th August 2015, with Purchasing Manager and project leader: open questions relating to the project management and evaluation of project performance.

2.3 Data analysis

The data, after being reported and contextualized, is again interpreted and constructed in logical arrangements in order to answer the three fore-mentioned research questions consistently and be coherent with the literature sources. Furthermore, the data is broken down and redefined to narrow down the project's scope and to avoid confusion in company X's large scale and bureaucracy. By reviewing the primary data collected and correlating it with the secondary data, the author acquires the compatibility between the theoretical best practices of centralization in indirect procurement and the actual centralization process. Based on the data generated and analyzed, the author formulates a SWOT analysis and a summary of encompassed prospective along the project process so that project members can use it as a referral resource for future decisions.

3. PROCUREMENT

Firstly, the introductory theory chapter begins with the terminology about procurement and distinguishes different characteristics among procurement, purchasing and sourcing. Then the literature emphasizes the important role of procurement in business performance and explains the strategic and organizational role of procurement in managing the operation and productivity of the organization. Thirdly, the theory describes how procurement is classified in terms of material categories and demonstrates the indirect procurement especially for MRO items.

3.1 What is procurement?

Procurement is a term to describe the whole process and responsibility of acquiring products or services from external suppliers to satisfy the demand of production and operation in an organization (Hyttinen 2013, 7). The reason is that almost every organization needs to outsource to external parties to purchase the products or services that it cannot make so as to run the business economically and efficiently. In a nutshell, the key function of procurement is to expand the organization's productivity and profitability by maximizing the cost savings, or in an other way, minimize the purchasing costs (Baily, Farmer, Jessop & Jones 1998, 3). In other words, all the costs which generated from procurement activity directly influence the bottom-line of business financial performance. (Iloranta, Pajunen-Muhonen 2012, 25) This impact will be discussed more detailed in next part. However, the cost factor is not the only consideration for the success of procurement function. Other considerations such as quality and delivery also contributes to the successful procurement. (Weele 2014, 4-5)

According to Iloranta, Pajunen-Muhonen (2012, 49), most terminologies used in procurement are usually unclear without official explanations and sometimes used interchangeably in verbal or oral. Therefore, it is important to recognize the philosophies of different terms which are closely mistaken with procurement. For

example, in business, the term procurement is often switched with purchasing if the speaker wants to mention about the buying activities. However, the term purchasing relates more to the daily transactional activities within the procurement, including buying and ordering goods and services (Cadenas 2012). Meanwhile, “Procurement is a wider term than purchasing” and consists of both strategic supplier management and operational purchasing (Lysons & Farrington 2014, 8).

Another term relating to procurement is sourcing. Sourcing is an extended function of international procurement because it holds a more strategic concept. Sourcing consists of the analysis of internal demand for the entire commodity category within an organization. By classifying varying demands for different purchasing commodities, sourcing applies the estimation for demand to calculate the cost saving opportunities through means of the spend analysis. Therefore, sourcing helps manager to spend more wisely in procurement. (Weele 2014, 85; Iloranta, Pajunen-Muhonen 2012, 146-147) Besides examining the demand forecast, sourcing also researches supplier market potentials and seeks for innovative suppliers to create new cooperation (Iloranta, Pajunen-Muhonen 2012, 51). The following Table 1 illustrates the difference and relationship among three mentioned, key terms, and how they are to be interpreted in this thesis.

Table 1 . Distinction of Procurement terms and how they are interpreted in this thesis (Hyttinen, 2013, 8)

OPERATIONAL	IN BETWEEN	STRATEGIC
PURCHASING	PROCUREMENT	SOURCING
Mainly transactional and commercial activities of <ul style="list-style-type: none"> ➤ Issue purchase orders (PO) and follow-up ➤ Call-off orders 	Combining responsibility of sourcing for suppliers and acquiring required products or services within agreed contracts <ul style="list-style-type: none"> ➤ Core function 	Demand analysis, market research, suppliers sourcing and selecting, contract completion and SRM <ul style="list-style-type: none"> ➤ Extensive function of procurement

3.2 Procurement role in organization

Procurement plays a key role and has a significant impact on the bottom-line of business financial and operational performance. Weele (2014, 12) stresses the importance of procurement, especially in manufacturing firms, by acknowledging that 50 percent of the cost of goods sold (COG) derived from expenses of materials and services.

Therefore, bearing the huge impact of any change in the procurement model on the organization's financial and operational performance, the procurement department is burdened with the majority of strategic and operational responsibilities. Lysons & Farrington (2014, 10) state that a large part of the purchasing function is concerned with obtaining materials that meet all the six integral components: quality, quantity, source, place, time, and price. More elaborately, he explains in detail the multiple goals behind the core roles of procurement in a typical manufacturer with the following points:

- To maximize the profitability, productivity and competitiveness of the organization by buying materials or services aiming at both highest cost saving and highest quality.
- To ensure that inventory is kept at the lowest buffer stock level to minimize holding costs but still at a secure level to mitigate the risks in emergency cases.
- To collaborate with suppliers who deliver the best performance, and response well to innovation and the introduction of new products.
- To integrate cross-functional departments (finance, R&D, project management) for all procurement activities to exchange data, information, and interchangeable expertise (Lysons & Farrington 2014, 11).

When the roles and the importance of procurement structure are explored elaborately, any efforts striving to devise a more cost-effective operation and more efficient management is fundamental in achieving good business performance and development.

3.3 Procurement categorization

3.3.1 Direct procurement and indirect procurement

In conjunction with the classification of two core purchased materials (direct and indirect materials), procurement category is separated into two corresponding types. According to Benton (2010, 138), these two types are as described below.

1. Direct procurement is the process of procuring all direct materials and services that directly and measurably contribute to the end-products. Direct buyer is in charge of direct commodities such as raw materials, semi-finished components and so on.
2. Indirect procurement is the process of procuring indirect materials that indirectly and unmeasurably contribute to the actual end-product of a firm. Indirect buyers are responsible for buying MRO (Maintenance, repairing and operations) materials such as cooling oil or packaging materials and safety gloves, and ORM items (Operating Resource Management) such as office supply and business service.

3.3.2 Indirect procurement of MRO items

Since this thesis only focuses on the centralization process for indirect procurement and places a greater emphasis on MRO items, it is essential at first to differentiate the characteristics of two main categories within indirect materials. Even though both ORM and MRO items belong to the same indirect procurement group, they should

be managed differently. The reason is that ORM belongs to the white collar (indirect office supplies), while MRO belongs to the blue collar (indirect industrial goods). Therefore, they have differing procurement process due to the level of complexity and enormous variance in cost and volume. For example, MRO items are sometimes listed as SKUs in the inventory, attached with more complicated and fundamental specifications, and performance regulations. Therefore, MRO items can cost up to several hundreds of thousands of dollars and must be procured under fixed-term contracts and price agreement. ORM items, on the other hand, are simpler, have smaller order volume, and are easily purchased because they do not necessarily require a fix-termed contract or agreement, or inventory management. (Neef D. 2001). The following Figure 1 demonstrates different characteristics of these two commodities.

Issues	"White Collar" ORM	"Blue Collar" MRO
Number of Orders	Moderate	Often hundreds of thousands
Quantity per Order	Few to moderate	Varies from one to thousands
Delivery Criticality	Generally low	Routine to critical to the point of work stoppage for delivery failures
Ratio of Single Source	Low	High percentage (up to 30% by count, more by value); may be single/very limited sourced
Services/Contracts	Some	Almost always required—performance is critical in many cases
Accounting Tie Back	Generally only to a GL account	May be multiple—to work order, equipment, GL and other accounts, capital tie back as well
Controlled Inventory	Rarely	Always
Internal Item Master	None	Frequently—usually critical functionality
Vendor Performance Measurement	Minimal—usually by contract	Almost always—variable measurement criteria

Figure 1. A comparison between ORM and MRO items. (Neef D. 2001)

According to Day (2014), the procurement of MRO items is more complex, and more time and resource consuming for most organizations. More specifically, MRO items are characterized by their shortage of standardization in multilevel organizations and their significant variance in specifications from multiple functions to several branches. Furthermore, MRO items require unnecessary intensive labour, resulting in low productivity generated from the repetitive and low value per transaction in MRO procurement (Neef, 2001). Nonetheless, the major cost savings, from reducing inventory and forecasting precise demand, can be achieved through collaboration between procurement professionals and responsible parties who engage in the procurement and management of MRO items. Traditionally, MRO is regarded as having low-value and low potential for cost savings but recent surveys show that typical manufacturer MRO's expenses make up only 16% of cost of goods sold (COG) but astonishingly 62% of total requisitions. Therefore, the strategic objectives in procurement of MRO items are to reduce substantial costs and to lessen complex processes in order to effectively manage and precisely forecast the huge quantity of stock keeping units (SKUs) against fluctuated demand. As a result, centralized indirect procurement has to be placed in close collaboration with supply chain management, striving for efficiency and higher cost-saving viability for MRO items. (DHL, 2009, 2)

4. CENTRALIZED PROCUREMENT

4.1 Centralization and decentralization in procurement

According to Weele (2010, 267), a centralized procurement structure places the purchasing unit in both a central and tactical position. In this thesis, procurement centralization includes the creation of a framework agreement for the use of the whole organization and contract management within a contract period. The term framework agreement is created especially for centralized procurement, which clarifies the terms and conditions relating to price, quantity and quality compliance

from suppliers with the company's buyers. Thus, the task of creating this corporate-wide agreement belongs to a central purchasing unit. Meanwhile, ordering and fulfilment tasks are still conducted as decentralized activities, although the procurement model is centralized. In this model, the central purchasing unit is responsible for collecting the demand forecast and bundling volumes of items whose product specifications are standardized and satisfy end-users. After that it proceeds with selecting final suppliers, negotiating and contracting. (Karjalainen 2009, 22-23)

Centralization in procurement attempts to acquire "the economies of scale in purchasing prices and process costs" by switching the individual purchases done by functional units with corporate-wide agreements. To achieve these benefits, the central purchasing unit formulates the procurement process and develops supplier base reduction. (Lysons & Farrington 2012, 164-165; Karjalainen 2009, 246). Some of the most notable advantages and disadvantages of centralized procurement are listed in Table 2.

Table 2 Summarized pros and cons of indirect procurement centralization (Weele 2014, 268, Hyttinen 2013, 12)

Centralization Pros	Centralization Cons
➤ Purchasing power (better contract's terms and conditions)	➤ Unfulfilled individual requirement
➤ Economies of scale (better price)	➤ Limit autonomy and decision making of business units
➤ Better visibility over spending cost	➤ Distant connection with end users
➤ More strategic procurement's focus for resource plan and research	➤ Less focus on units' needs.
➤ Product and supplier standardization	

The opposite approach to centralized procurement is decentralized procurement. This procurement structure allows each functional unit to be responsible for a cost center and therefore, use its budget to purchase its individual orders. This model is driven by units' independent needs and focuses on a unit level rather than a corporate level as in the case of centralized procurement. (Weele 2014, 267)

Decentralized procurement, therefore, preferable by unit members who can directly influence and make the decision on their purchased items to satisfy their needs with higher productivity (Hyttinen 2013, 12). The most prominent advantage of this structure is the allowance for autonomy in a business units-driven organization. Nevertheless, its major shortcoming is the obstacle to controlling and monitoring the total spending on indirect materials in the organization because different units from same corporation may purchase the same products from same suppliers but with different prices and conditions. Moreover, the supply chain transparency and effective process management are also hindered by the involvement of higher number of vendors who provide various items for the same product category. (Weele 2014, 267) In the procurement report by EY (2014, 3), the leading world auditor and business advisor highlights that indirect procurement still lacks spending visibility and strategic management. The reason for that is because decentralized indirect procurement model is frequently overwhelmed by overlapping and scatter transactions across business units and geographies, and therefore, retards its leverage for highest cost saving as well as diminishes buyers' negotiation power for better prices and service conditions. Decentralization structure, a sluggish procurement model, stems from its disorientation and separation of cost savings from motivating buyers to perform the best tactics and reach the best deals. Therefore, business should only consider opting for decentralized procurement when there are unique product requirements requested from different business units. The below Table 3 demonstrates more detailed the pros and cons of decentralized procurement model.

Table 3 Summarized Pros and Cons of Decentralized Procurement (Weele 2014, 268, Jukk 2013, 12)

Decentralized Pros	Decentralized Cons
<ul style="list-style-type: none"> ➤ Focus on unit needs ➤ Autonomy for business units ➤ Shortened distance between suppliers and end customers 	<ul style="list-style-type: none"> ➤ “Dispersed purchasing power” due to the lack of economies of scale. ➤ Overlapping work especially in supplier selection

➤ Reduced needs for internal coordination and bureaucratic purchasing process	➤ More focus on operational activities (rather than strategic) ➤ Hide purchasing cost
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As supported by Trautmann et al., 2009b, the theory and introduction of centralization in purchasing should be differentiated from other two methods including decentralized and hybrid structures (a structure that combine both the advantage of centralized and decentralized procurement). The reason is that the centralization process does not necessarily involve the entire procurement system but is related to the centralized supplier management, and bundled contract dealing. (Arnold 1999).

4.2 When to centralize

The question of what extent and which product category should be subjected to centralized or decentralized procurement process is quite complicated to answer. Weele (2014, 273) mentions three most common factors to consider when a firm wants to make this decision.

- The extent of familiarity among ordered products: The higher the familiarity among the products required by different units, the higher chance procurement team has to standardize product requirements and bundle across for centralizing approach.
- Supply market structure: If the capable suppliers, who can provide the materials, are scarce, but the available ones have a strong reputation and big market share, the purchasing power balance will consequently be shifted to the supplier's side. Such dilemma can be resolved if there is an opportunity for centralized procurement approach by securing suppliers with safe offers such as multi-year agreements with bundling volumes. Thereby, the negotiation power can be rebalanced. (Paranikas 2015, 93)

- Feasibility of cost savings for some potential materials. Such standard commodities like MRO items are relatively sensitive to volume, indicating that the higher the volume, the greater the cost savings.

Beside general decisive considerations, Kraljic (1983, 114) designs a 2x2 matrix to categorize four product portfolios, each of which has different management and procurement structure. From his point of view, not any products can be treated as centralized; some are applicable but others are not.

The model firstly classifies all products in terms of profit impact and supply risk, then it analyzes the supply market for these materials to specify relevant strategic supply positions. The model's ultimate goal is to help managers develop adequate managerial tasks and centralization decision authority for specific purchase categories. According to Kraljic (1983, 116), centralization can be suitable with bottlenecks but not non-critical items. The below

Figure 2 adapted from Kraljic (1983, 111-2) illustrates the classification of product complexion together with the corresponding managerial tasks.

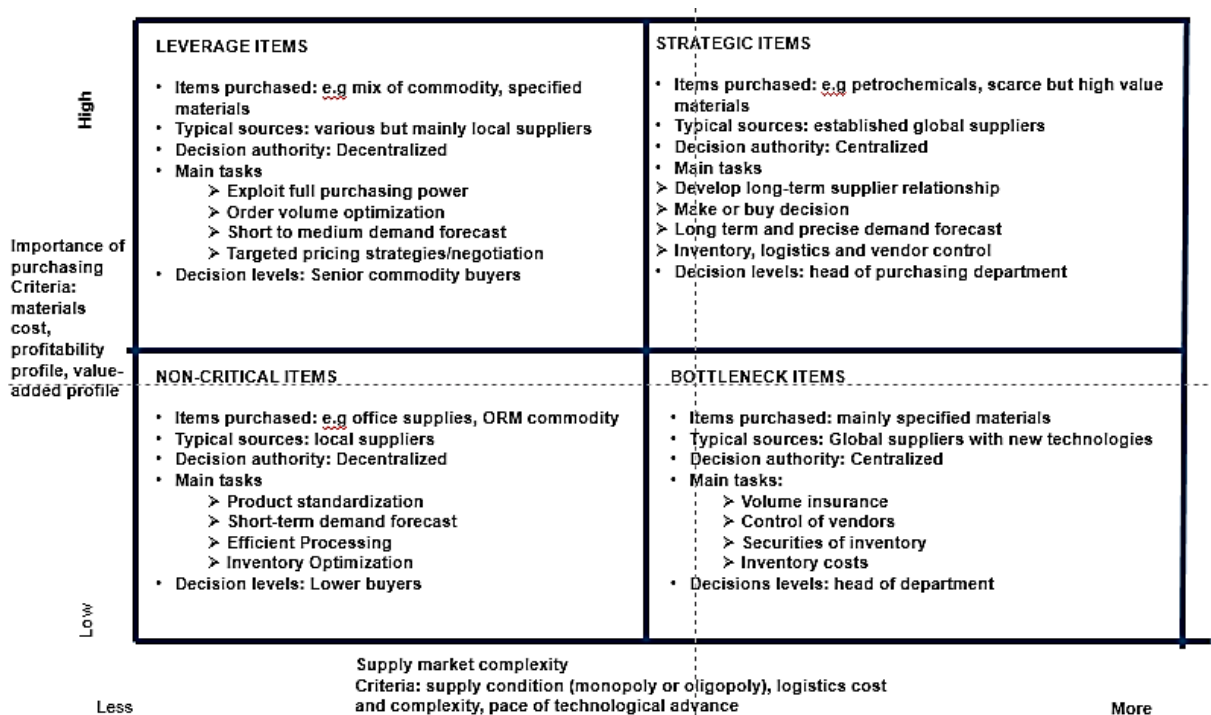
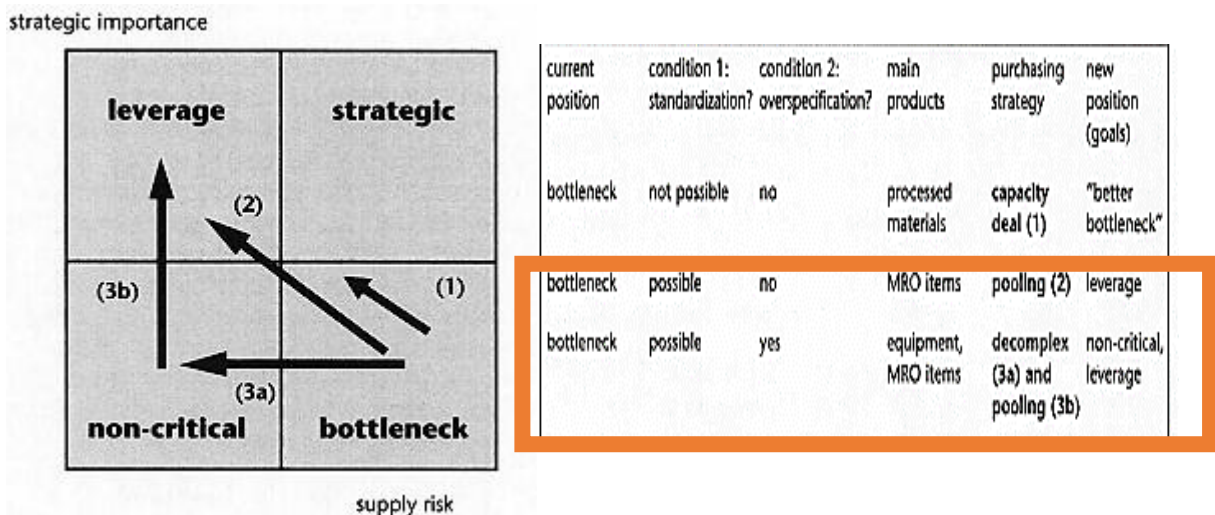


Figure 2. Kraljic portfolio management (Adapted from Kraljic (1983, 116-9))

However, Gelderman (2002, 32) argues that Kraljic portfolio management undergoes some pitfalls. For example, there is no such formal calculation to measure the “Low” and “High” rule and no valid quantitative approach to measure the value of the decision. Therefore, he recommends and identifies possible movements within the matrix to mitigate the risks but increase the profits of products, depending on specific purchase goals, strategies and conditions.

For MRO items which belong to bottleneck categories, Gelderman (2002, 33) underlines that such items can move to new leverage position to reduce risk but attain higher purchasing profits. Thereby, the centralized procurement will integrate with business units to mutually agree on standardized specification requirements and pooling purchased volumes decision. Thus, the buyer can exploit purchasing power and supplier base is switched from global to local scale for better and easier contact and management (

Figure 3). To summarize, the portfolio matrix facilitates the development of several purchasing strategies, aiming at the synergy of bottleneck (MRO) items across cross-functional units. These objectives are exact the centralization indirect procurement’s purposes that are stated earlier.



4.4 Best practices in effective procurement management

4.4.1 Spending analysis

In order to develop the purchasing strategy which hits the key sustainability of MRO procurement, the first step is to analyze the MRO spending patterns. This spending analysis is a strategic and disciplined approach to supplier selection and purchasing management. (Nick Day 2014) Weele (2014, 12, 85) contends the analysis's major objective is to leverage the spending compliance, reduce supplier risks through market and supply data, and gauge insightful sourcing decision by improving spending visibility and product standardization. Aberdeen research conducted by Limberakis (2012, 10) reveals that among automotive firms which were belonged to 132 surveyed organizations, more than half confirmed to have automated spend analysis processes but with limited experience in classifying and enriching data extracted from warehouse. And still 37% of responses showing that they are still using normal spreadsheets as a conventional approach to spending analysis. More significantly, in the automotive industry, the frontier firms, who can perform a "fully-automated" spend-analysis systems, successfully experience 11% of average saving.

The key process for an optimal and thorough "spend analysis sequence" is the ability to define spend scope, then extract the data to cleanse, classify and enrich, resulting in a spend profile, based on which buyers can identify saving opportunity. Other critical key performance metrics to evaluate the efficiency of spend analysis depend on the management knowledge (contextualizing the data to report to key stakeholders) as well as technology usability (easy to access and integrated with data from other ERP systems and procurement-related applications). By following best practices for the "spend analysis sequence", world-class organizations are

capable of utilizing “a technique of predictive analytics” to get more insights about susceptible factors in indirect procurement performance, and quicker assessment to spending management. (Limberakis 2012, 12 - 19)

4.4.2 Mitigate maverick buying

When organizations seek for dynamic aspects to utilize purchasing synergy, they attempt to lower costs and inflate procurement efficiency. As a result, they transform the procurement model to a centralized one. Thereby, central purchasing unit creates corporate-wide framework agreements which are fixed to a preferred supplier with clear contract agreements. By doing that, the firm can avoid separate and unit-based contracts created for the same items which are purchased under different suppliers. (Karjalainen 2009, 246) However, centralized indirect procurement often attributes to non-compliance buying ethic called Maverick Buying (MB). This is a term indicating non-compliance purchasing behavior that drives buyers off using pre-agreed contracts from selected suppliers. (Chaffey 2011, 366)

There are many reasons behind the Maverick Buying, but the main one is the insufficient understanding of off-contract’s substantial influence on Total Cost of Ownership (TCO) for organization (Karjalainen 2008, 249). The buyer should pay attention to TCO which is the aggregated cost incurring before, in between and after transaction, instead of the item’s price only. In other words, employees and buyers assume that the off-contract suppliers offer cheaper prices, or they get used to working with those suppliers due to personal or opportunism preferences. By unconsciously or consciously doing that, they actually commit to Maverick buying compliance, and therefore, neglect the Total cost of Ownership (cost of reworks, maintenance, supplier rework and service issues) derived from off-contract suppliers. (Karjalainen 2008, 248-250) Therefore, training buyers with a TCO recognition mindset is a critical solution to avoid maverick buying opportunism triggered by the employee preference to a more favourable, lower-cost but higher risk suppliers (Ellram 1993, 8).

Another cause, beside the insufficient knowledge in Total Cost of Ownership, which pulls up Maverick Buying and deteriorates the procurement synergy acquired from centralization is the low accessibility to pre-agreed contracts. Hence, to mitigate the high likelihood of MB behavior occurrence, E-procurement implementation is estimated to reduce 30-40% of Maverick spending on centralized purchased products and services (Karjalainen 2008, 252). The specific benefits of E-procurement and its deployment in centralization of MRO procurement will be discussed more detailed in the next literature part.

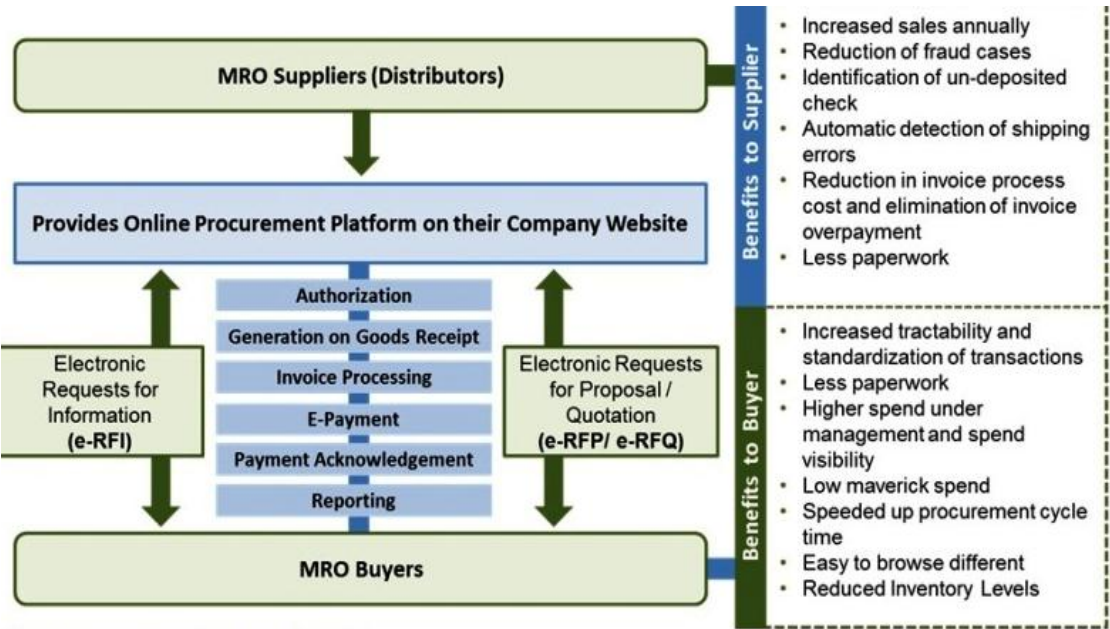
4.5 Supporting tools for centralizing procurement of MRO items

4.5.1 E-procurement

E-procurement is the most representative and typical tool used to support the centralized procurement, and it is especially useful for the indirect procurement (Benton 2010, 139). As mentioned earlier, indirect materials account for 30-60% of total expense; therefore, it is recommended that indirect procurement should be centralized to manage effectively the contracts, product database, catalogues and constant updated prices. To facilitate these time-consuming and elaborate tasks, such web-based procurement portal supports to centralize the procurement process. E-procurement usage aims at three benefits: (1) lowering administrative costs from large purchased volumes; (2) better negotiating product's conditions in terms of price, quality and service; (3) motivating interactive users with technology exposure in order to terminate off-contract or maverick buying behavior (Rebecca 2007, 108). Above all, E-procurement is an introductive tool to enhance spending transparency (Weele 2014, 85) because all the spending data of e-orders are embedded electronically in the background system and easily to be extracted with spending report analysis to support regular audits and monthly monitoring (Lysons & Farrington 2012, 184; Chaffey 2011, 360).

By means of reducing administrative cost, E-procurement's objectives are accompanied with centralized procurement's purposes in cutting off transactional costs due to overloaded paper work from overlapped orders. Therefore, buyers have more time for tactical procurement research and planning. (Weele 2014, 271 - 272) Additionally, by integrating E-procurement with the payable accounting system, e-invoices are issued in an automatized way, instead of the traditional way (paper invoices, work orders and billing papers). These online-stored documents are always available to assess quickly and cross-check precisely between end-users and payable accountant. Therefore, for scattered and limited orders, buyers can pass the administrative activities to end-users who directly and independently place the electronic call-off orders. With this type of "order-to-pay solution", not only TCO is reduced by lower transactional cost, but the payment process is also mitigated from unnecessary frauds and hence, is fastened up. (Weele 2014, 48) The following

Figure 4 visualizes the E-procurement process, especially for MRO items and its benefits to suppliers and buyers.



Above: E-Procurement Function and Benefits

Figure 4. E-procurement system and benefits (Source ReliabilityWeb)

Opposite to advantages that E-procurement pledges to, this web-enabled solution tool plagues with certain problems from the beginning. Firstly, this system requires advanced procurement technological knowledge, clearly guided purchasing process as well as seamless integration with other ERP systems which are used to collect purchasing-driven data (Weele 2014, 273). Another shortcoming confronted by procurement department when conducting this system is the resistance to change purchasing routines of key stakeholders (Hyttinen 2013, 16).

4.6.2 Extended MRO procure-to-pay process

As stated earlier, MRO is a critical type of indirect procurement and often purchased in big bulk with thousands of SKU for inventory stock, but mostly performed by decentralized purchasing. Moreover, DHL (2009, 2-4) points out that the biggest problem of MRO items is their supply chain fragmentation, high inventory costs, difficulty in consolidating precise demands, and large volumes of transactions. Therefore, this product category is always lost control over TCO, and the resolution to tackle MRO supply chain inefficiencies is a supportive force to construct a more effective procurement centralization. DHL (2009, 7) applies the lean principles to the ordinary “Procure-to-Pay” process, and creates an extended model in order to streamline MRO item supply chain, and enhance the transparent visibility over the total MRO procurement cost. This advanced model consists of “three key areas: Sourcing (strategic procurement), Purchasing (tactical procurement) and Logistics (Design optimization and Operations)” as shown in Figure 5.

PROCURE-TO-PAY PROCESS

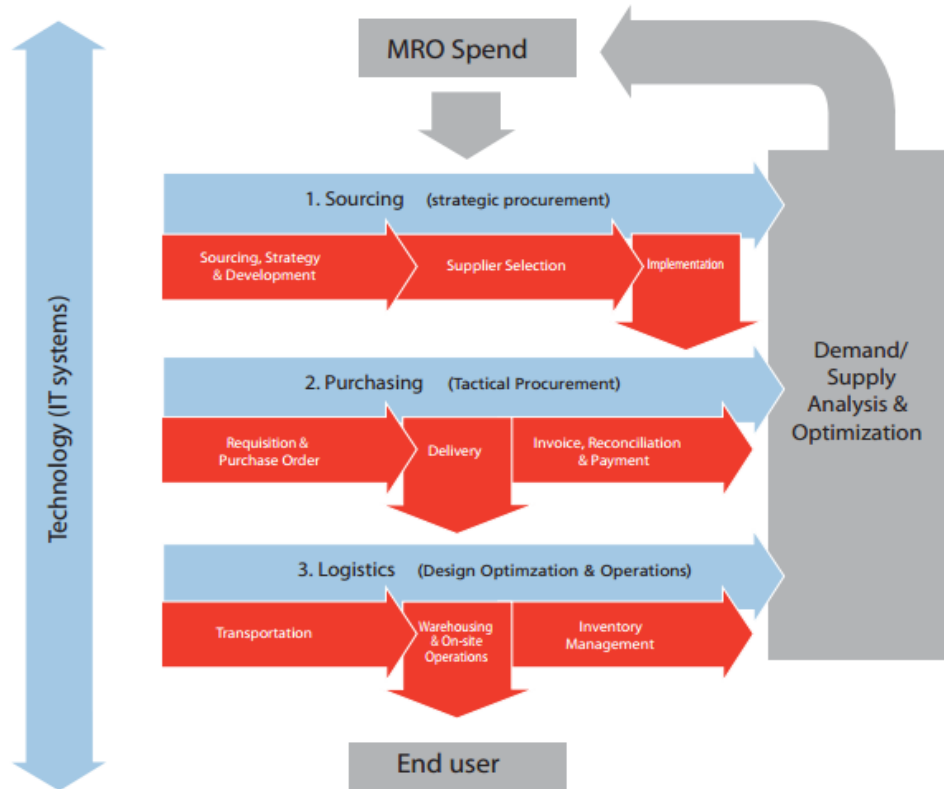


Figure 5. Procure-to-pay process for MRO items (Source: DHL)

The first step in the process is the sourcing phase which consists of activities relating to sourcing strategy and development, following with supplier selection and implementation of purchasing phase. In the tactical procurement (Purchasing) phase, the receipts of purchase requisitions allow the issuance of purchase orders (POs). When POs are released, items are delivered and once received, they are invoiced and awaited for payments. More specifically, the delivery task in the purchase phase is integrated with the Logistics phase where items are transported to the warehouse. Some items are used for on-site operation of end-users, while the remaining stock are controlled under inventory management by logistics planner. The mentioned E-procurement system above, one of the complementary technological tools, together with the ERP system which is used for order fulfilment

and invoice payment, play a critical role in creating an extended seamless “Procure-to-Pay” process of MRO items. (DHL 2009, 8)

4.7 How to overcome pitfalls of procurement model transformation

As concluded in part 2, MRO procurement is a complex activity that combines both operational and tactical approach from both buyer and cross-functional units. Due to its significant impact on organization’s bottom-line and productivity, procurement has to be always well structured and continually strives for the highest cost-saving target, but still ensures the supply chain efficiency. Under such pressure, MRO procurement should be directed to centralized procurement structure. To successfully transit to a new model, E-procurement and Procurement-to-pay process must be managed in the most sustainable, cost-effective, and lean way. However, such results coming from the reorganization of procurement structure for a particular commodity category is not easily and shortly achieved, with immediate and weighable results. The procurement transformation requires employee collaboration, strategy, and technology to together handle and mitigate both implicit and explicit risks. This section will depict how to manage risks and improve efficiency in the project of centralization procurement.

4.7.1 Supplier management

The implementation of E-procurement to support the centralization will potentially revoke resistance from not only internal users but also external parties if suppliers do not want to change their routine work. Because suppliers are conscious that such tools and new processes support buyers in controlling their business and higher the negotiation power further, making suppliers less beneficial. Thus, that is the situation when vendors refuse to adapt with the new integrated system due to their rigid organization culture. (Chaffey 2011, 366- 367) Moreover, the incompatibility between buyers’ E-procurement system with suppliers’ administrative system may bring up some technical and expertise challenges as well (Weele 2014, 273).

Confronting such challenges in adapting collaboratively with suppliers, business must seek for new ways to rewrite their supplier management relationship.

In the traditional supplier and buyer relationship, each side desires for individual benefits, and business partnership runs on rewards and penalties in order to prevent each other from opportunistic behavior. In such relationship, information is shared on an event- driven and need-to-know basis for the performance evaluation. (Ritvanen, Koivisto 2006, 109-110) Nowadays, in such fast pace of globalization and technological innovation, such relationship cannot exist if a firm wants to increase its competitive market share. Therefore, it seeks for various dimensional strategies to redesign the relationship with suppliers to be more efficient and sustainable. In other words, the collaboration partnership is changing to be more strategically adaptive by means of communication, incentives and cooperation mechanism (Martáñez 2014, 63). This partnership reveals that information should be more opened and freely exchanged. If a firm aspires to cut cost in a current area, it should be willing to share even sensitive and confidential data in that relative area to find the joint support and together solve the problems with suppliers. Second, the incentives for doing business should be modified from the traditional method of value distribution to the modern collaborative approach of value creation. This change indicates that instead of the old way of using rewards and penalties to evaluate jobs performed, the new adaptive way is to share risk and success equally between both parties so that suppliers are more open to try new innovative resolutions that can benefit both sides. And finally, to make the adaptive strategy work, a new mechanism for collaboration is required and aimed at facilitating trust, learning, and fragility in current fast-changing competitive environment. (Martáñez 2014, 64-8)

Last but not least, supplier evaluation scorecard is an indispensable part in the supplier relationship management (SRM). This is a tool to assess supplier's performance, relying on the pre-defined key performance indicator (KPI) checklist. KPIs are the parameters to measure performance, operation, and internal customer satisfaction of suppliers (Weele 2014, 216). In general, the most frequent and

obvious aspects to cover in the scorecard are pricing and non-pricing evaluation. In pricing evaluation, the scorecard compares the weighted cost value whereas in non-pricing evaluation, the scorecard examines the product quality, delivery service responsiveness, and product innovation of suppliers.

4.7.2 Internal customer management:

A project is generally described as a set of actions to create something new, and project management refers to an approach to guide project member team to fulfil the project's objective (Hyttinen 2013, 27). Being in the central role of a project is the project manager, who has an overview of the whole project, and whose primary task is to direct project member to follow their assignments completely. If the project manager does not hold strong voice and active participation in the project, team members can be possibly fallen behind the scheduled process or deviated from the right track (Berkun 2006, 10). Thus, the project manager's commitment to support project's main goals is the most crucial characteristic to acquire a high accomplished project (Berkun 2006, 310).

Another important success factor of a project is leadership skill, the ability to direct and manage the team effectively by maintaining clear communication over distance and team integration among members (Hyttinen 2013, 29). The leadership role is especially critical in such centralized procurement project due to the complexity of MRO items' supply chain flow. More specifically, Maverick buying, a huge challenge for the centralized procurement to overcome, can be mitigated with the support of not only E-procurement but also high purchasing leadership which helps to educate employees with TCO understanding, enhance contract visibility as well as power forces to urge others to follow the guidelines (Karjalainen 2009, 246-257).

Last but not least, as noted already in previous chapters, the procurement structure is such a complex organization which consists of the procurement department itself but also cross-functional units which are influenced by interactive centralization

activities. Thus, “cross-organizational cooperation” is a valuable asset to maintain the procurement management efficiently. The concept of this approach indicates that every responsible unit relating to the acquisition process must support purchasing unit (Hyttinen 2013, 30).

5. CASE ANALYSIS AND PROJECT IMPLEMENTATION PROCESS

In this chapter, the centralization procurement project for representative MRO items of company X are illustrated, focusing mainly in the process description of the leap from decentralized to centralized structure in MRO procurement in company X. The process includes four phase: planning, preparation, execution and management.

5.1 Case company and the project:

Company X is a multinational manufacturer which owns a manufacturing plant to produce products for export, a commercial office for business and sales, and a research centre for new product invention in Vietnam. The headquarter has invested vastly in running three different branches at the same time, associating with inevitable and tremendous expense pouring into both manufacturing and operational activities. In fact, the costs of indirect materials are significant in company X because these commodities are purchased not only to serve business office activities but also to meet production demands. The detailed of each type of indirect materials are illustrated in Table 4 below.

By differentiating the characteristics of two main types of indirect materials, the project put considerable attention to MRO items for their fragile and susceptible effects on supply chain and procurement management. Then, the purchasing manager decided to select only two items from MRO category in order to conduct the centralization procurement. Because of the limited budget as well as the complex degree in MRO product specifications, the project was designed to start with the

most standardized and precise demand-forecasted items, which are safety gloves and packaging materials.

Table 4. Summary of Indirect materials purchased in company X

INDIRECT MATERIALS	ITEMS	END USERS
<p>MRO items</p> <ul style="list-style-type: none"> • Complimentary and auxiliary tools for production, assembling and researching • Maintenance and repairing materials or equipment • Packaging materials and safety clothes 	<ul style="list-style-type: none"> • Pipes, valves and fittings, fasteners; hardware and tools for labs, assembly. • Chemical and lubricants, industrial supplies • Stretch foil, strapping rolls, straps, gloves, eyes or face protection 	<p>Factory employees from manufacturing plant.</p>
<p>ORM items</p> <ul style="list-style-type: none"> • Office supplies • Service commodities 	<ul style="list-style-type: none"> • Furniture, stationery, uniforms, laptop, printer • Marketing, promotion, event, travelling, transportation, consulting, training, human resource 	<p>Office employees from commercial branches and from manufacturing plant.</p>

In company X, indirect materials, especially the MRO category, are normally procured under the decentralization model to allow individual unit's dependence. However, recently the top buyers recognized the great potentials in enhancing cost effectiveness and reducing resource consuming from MRO decentralized procurement. In order to leverage the financial and operation benefits, and to eliminate the pitfalls undertaken by MRO procurement, the project manager decided to restructure the procurement model from decentralization to centralization. However due to the budget and the complexity in procurement characteristics of various MRO items, company X decided to select only packaging materials and safety gloves as two most representative and typical items that fit the requirements

of centralized procurement. Thereby, they can use these two items as the trials to navigate necessary improvements and estimate the completion duration to replicate the centralized procurement process for the remaining MRO items. Before explaining more profoundly about which judgement considerations and quantitative models used to determine these two MRO items for the project, it is essential to have an overall picture about detailed item descriptions, usages and end-users of packaging materials and safety gloves. The following Table 5 describes the project structure regarding to the centralization procurement project of packaging items and safety gloves (MRO items).

In the case of company X, the strategic procurement in the project was delegated to a central purchasing unit which consisted of purchasing manager, project manager, and project leader, accompanying with key stakeholders. All the project members play certain important roles to successfully carry out the project. Understanding the project’s structure, all member can stick on their main roles while provide support and constructive feedbacks to the project leader.

Table 5. Characteristics of company X’s procured MRO items: packaging materials and safety gloves.

MRO ITEMS	ITEMS DESCRIPTIONS	USAGE	END-USER DEPARTMENTS
GENERAL PACKGAING MATERIALS	<ul style="list-style-type: none"> • PE stretch foils • PE strapping rolls • PET straps • CBS corners • Logo plastic tapes 	<ul style="list-style-type: none"> • To wrap finished products for delivery to retailers, storing in warehouse or export 	<ul style="list-style-type: none"> • Logistics workers for an in-house warehouse in manufacturing plant. • Logistics workers in a second warehouse near business office.

EXPORT PACKAGING MATERIALS	<ul style="list-style-type: none"> • Orange blisters • Yellow blisters 	<ul style="list-style-type: none"> • To hold finished items for export and import 	<ul style="list-style-type: none"> • Logistics department in manufacturing plant.
SAFETY GLOVES	<ul style="list-style-type: none"> • Lap usage gloves • Chemical and oil resistant gloves • Inspection gloves • Industrial gloves 	<ul style="list-style-type: none"> • To prevent the interaction of user's hand with the equipment or chemicals' surface 	<ul style="list-style-type: none"> • Users in laboratory • Workers in assembly lines • Workers in line production department • Employees in quality assurance department

The project, in general, is divided into four stages including planning, preparation, execution, management and development. The following Figure 6 describes the project schedule and general tasks allocated in each project phase. In overall, the project duration was within approximately six months.

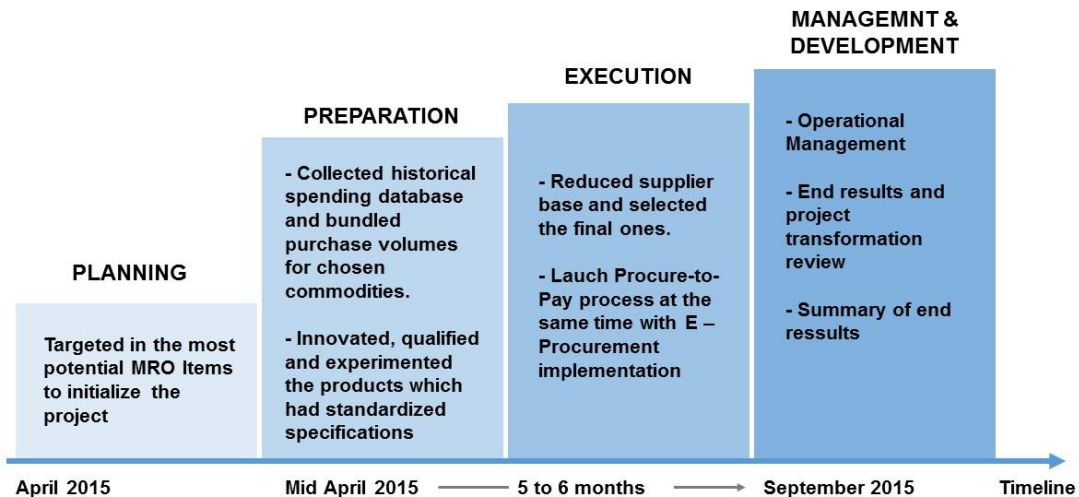


Figure 6. Process timeline of MRO centralized procurement of company X

5.2 Planning phase

This section aims to explain the incentives of project implementation and why company X chose MRO items, especially the packaging materials and safety gloves as the objects of centralized procurement project, regardless of other MRO alternatives.

5.2.1 Considerations for centralization decision in MRO procurement

According to the project leader, MRO items were highlighted with great concern for cost effectiveness and operational management. The project manager intuitively recognized that the inefficiency in productivity and cost controlling were stem from the decentralized procurement model. From which, each user department had their own cost-profit centres and autonomously ordered products, which fit their desired specifications and are supplied from a preferable vendor, in order to achieve their own benefits. This decentralized procurement structure allowed business units to self-determine their individual needs. However, this procurement model corresponded with high disadvantages in losing negotiation power, unnecessary management for overlapping order, together with the hidden purchasing cost. Therefore, the MRO procurement was transformed from the decentralization to centralization so as to achieve the cost-saving opportunities and optimize the procurement process for these indirect materials.

As a result, company X's responsible regional key buyers of MRO items started to consider the compatibility of specific MRO items which could justify the centralized procurement conditions and yield positive results. The project manager used the judgment method which was based on her historical experience in dealing with different products in MRO category. As a result, final two MRO items were opted for the centralization project, including packaging materials and safety gloves. The considerations to determine the centralized procurement of these items were:

- Familiarity and standardization: Both products were completely matching with this condition for centralization. The packaging materials for both end - users varied insignificantly and were mostly similar in raw components (plastics, carbon, and wood). They were only diverse in the measurement and design specification such as thickness, durability, and weights. For the blister packaging, the item which was currently bought from an oversea supplier was recently offered by an international supplier in Vietnam. The alternative local blisters shared most familiarity with the original ones. For safety gloves, the situation was slightly different because gloves' specifications varied vastly, depending on the usage of each end-user. However, project leader had the optimistic signs of reducing the variance in gloves types by working with R&D, end-users and innovative suppliers in order to seek for standardized gloves which can be used for multiple tasks.
- Supply market structure: For packaging materials, currently there are only two local suppliers who were qualified for their cost, quality and service. For safety gloves, there are total two suppliers who are both local and global. The common notable point is that both products have relatively scarce supplier sources. According to the project leader, by centralizing, the price negotiation power can be achieved if buyers bundled ordered volumes to one supplier only and binding it with a multi-year agreement to avoid product's price volatility. This is a win-win situation for company X to take advantage of economy of scales, and for selected vendor to secure a fixed business contract with a preserved demand.
- Volume aggregation: From project leader's experience, both packaging materials and safety gloves were frequently ordered by scattered but frequent order transactions because these materials were used on a daily basis. However, the total volume purchased under the packaging and safety gloves commodity groups were aggregated from about ten to twenty thousand units

per year. Therefore, the project manager recommended the project leader to consolidate all the purchase orders had been purchased in the history and compare the actual spending volume with the forecasted assumption from all end-users to bundle the purchased volume consistently and effectively.

5.2.2 Decentralized MRO procurement model before centralization

Moreover, in this planning phase, the problematic characteristics with decentralized procurement of packaging materials and safety gloves were presented and summed up in the following table so that at the end of the project, the transformation in procurement activities and end results can be comparable between the old and the new model. (Table 6)

Table 6. Decentralized MRO procurement model of packaging and safety gloves in company X (BEFORE PROJECT)

MRO ITEMS	DECENTRAIZED PROCUREMENT ACTIVITIES	SUPPLIER BASE
PACKAGING MATERIALS & SAFETY GLOVES	<ul style="list-style-type: none"> • Each end-user decided the specifications and selected suppliers after buyers negotiated prices according to end-users specifications. • Each end-user used different suppliers even though the products purchased were overlapped. • Prices per unit for overlapping products vary from one to another suppliers. • Gloves specification variances led to more purchase orders (PO) to issues, leading to higher invoices for payment and more difficult to manage a vast range of suppliers. • Unnecessary, time-wasting and repeated operative purchase transactions were performed by one buyer only. • End-users exclusively designed the specifications without interfering from buyers. • Items were procured for “just-in-cased” situation with unnecessary volume to avoid waiting for delayed delivery • Purchases were scattered with no prior demand forecast. • No framework agreement or price agreement exists except the quotations (Maverick Buying detected) 	<ul style="list-style-type: none"> • The wrapping items are provided by two local suppliers: one was selected by logistics department in manufacturing plant; the other was selected by logistics department in commerce office. • The blisters supplier, a foreign supplier who offers higher price per unit and unpreferable Incoterms, was selected by Logistics users. • Four type of gloves was purchased from two different suppliers who are both local and foreign, and selected by end users.

Besides general considerations about standardized principles for centralization decision, the key buyer and project leader also considered Kraljic matrix. According to the philosophy of Kraljic matrix, top buyers understood that different items need different management and strategic mechanisms to stretch their profitability and constrain the disruptive occurrences. As according to Kraljic portfolio, both packaging material and safety gloves are typically classified as bottleneck items due to its considerable high supplier risks(few suppliers can meet product quality requirement and adhere to purchasing procedures in company X) and a low importance of purchasing (low profitability and value-added profile). To navigate these MRO items to a less-risk and higher-profit position, the project manager came up with the centralization decision, formulated by the pooling strategy, bundling purchase volume and standardizing products' specifications. In overall, the needs for purchasing arise across different units and branches. However, only such items like packaging materials and safety gloves have more superior capability than other MRO items to centralize the procurement process. Therefore, they are selected for the centralized approach. Other remaining MRO items still need considering about their degree of uniqueness to assure the compatibility with the centralization model. Therefore, they were still purchased in the old decentralized way.

5.3 Preparation phase

5.3.1 Spending analysis for packaging materials and safety gloves

After a thorough and careful plan, the next project phase is about spending preparation. In this phase, the project manager and the project buyer cooperated to define the possibility of cost-saving to be achieved by using the quantitative assessment, the spending analysis. Based on the statistic and cost-related analysis, the buyer can determine which suppliers had more cost-efficient advance, where from the decentralized process, costs can be cut down, and which prospects they could achieve further cost improvement. All the transactional data can be extracted automatically from the Enterprise Resource Planning (ERP) system with information

from the accounting and procurement department. After that, the conclusive report is manually categorized, cleansed and enriched, depending on which purchasing information perspectives buyers wanted to examine. Basically, the spending analysis was stimulated in following steps:

- Define and agree on the spending scope depending on relative parameters
- Extract data including the supplier information and chart of accounts
- Cleanse, categorize and enrich the spending data
- Analyze the spending data

In this planning phase, the spending report was monitored by the project leader. Whenever there were suspicious statistics in particular purchasing transactions and unusual high net value per purchase order, the key buyer noticed the project leader for clarifying. In case the information was insufficient and still questionable, the project leader was responsible for questioning the key stakeholders, accountants and even suppliers, who all involved in the transactional and ordering activities, in order to track down the core attributes for that suspected spending data. Therefore, developing a cross-functional surveillance and constant involvement in the spending analysis persistently supported the foundation of strategic planning as well as enhanced the capability of influencing key stakeholders (head of user departments and CFO) to jointly take action in the spending visibility. The spending period for analyzing must not be too short; otherwise, seasonal spending patterns would be neglected. Thus, a two-year period is much more appropriate in deciding the spending scope. Before extracting data, the buyer should also notice to arrange different spending reports for the same commodity number in line with different end-user departments' historical transactions.

5.3.2 Extract spending data history

To pull off the supplier information relevant with the chart of accounts, the spending data was automatically extracted from SAP system (a type of ERP solution). Most of

the transaction info needed was integrated between procurement-based statistics together with logistics orderings, and payable account records. The following information would be pulled out from the procurement database and payable accounts:

- Supplier information: vendor code and details.
- Purchase Order (PO) information: date of order placement, the code of user departments, the volume ordered, PO value, and code of the person who places the order (buyer code)
- Invoice payment: the actual invoiced total cost, the total spending under each vendor by each end-user for a same commodity number.

As a result, with the adoption of SAP platform, a seamless spending analysis can easily be achieved without unnecessary physical involvement from other related parties to help diagnose the overlapping or missing purchasing transactions.

5.3.3 Categorize and analyze the spending data

The next step in the spending analysis was to categorize data manually. In this phase, data would be cleansed to eliminate unimportant parameters so that the buyer could focus on the strategic statistics exclusively. Project leader could classify, for example, which vendor from two packaging vendor had higher aggregated packaging spending by volume, unit prices, or order frequency. More particularly, which logistic users out of two possessed the higher packaging materials purchase quantity or higher consumption demand. Besides, pricing and volume traits, item specifications were also categorized in details, depending on the degree of complexity and purchasing frequency. After categorization was accomplished, data enrichment was put into action. In this stage, additional and useful information was provided to enrich the spending analysis. For example, end-user experiences about product quality and vendor performance were added in a graded ranking. Average score for performance evaluation was also added to fully reflect supplier's

cooperative manner in revising requests for quotations and competency in innovating and compliancy. Now spending report was ready for analyzing. Project leader started to identify which supplier between two had higher opportunities to be the final competent one to handle the whole bundled volume. Thereby, the project leader addressed the supplier base consolidation. This indicated that under each commodity group (two packaging types and safety gloves), the project leader analyzed one supplier who accounted a higher percent of the total spending. A lower spending percentage meant a higher plausibility to leverage purchasing power by aggregating more purchase volume. Additional measurements for supplier selection included price competitiveness (mostly based on unit price and highest price discount portion), quality utilization (based on supplier's ability to support item standardization and provide the most adequate product as inquired by end-users) and service performance (based on complimentary weighted points evaluated by end-users and project leader). The final analyzing results, after being consolidated and benchmarked, were presented and discussed with the project manager to navigate the right tactics to negotiate and select the final supplier for packaging materials and safety gloves.

5.4 Execution phase:

When all necessary data was gathered and completely analyzed, the execution phase was conducted. In the phase was conducted. In the execution phase, three main activities was carried out, as described in

as described in

Figure 7.



Figure 7. Execution process in centralization MRO procurement project of company X

5.4.2 Supplier selection

To begin with, utilizing the information gained from the spending analysis together with three considerations taken from the planning phase, the project leader made the most of these data and statistics to negotiate with suppliers in order to pick out the final most cost-efficient supplier. Project leader mentioned that the negotiation tactics that she applied to gain purchasing power were the economies of scale from bundling order volumes and long-term agreement offered with fixed price within restricted price fluctuation percent. The success factors behind effective supplier base consolidation were price competitiveness, quality competency and supplier history performance. Elaborate steps in the supplier selection for pooling orders from purchasing materials and safety gloves are illustrated in Figure 8.

Unified Specification

- Item specifications based on end-users' requirement but standardized with support from R&D and suppliers.
- Estimated annual consumption: based on spending analysis
- Delivered volume per order and specific quality or delivery requirement: depend on the desired usage of end users and inventory management of logistics planner



Send Request for Quotation (RFQ)

- Quotation requirements: price per unit, supply capacity, quality-proven and valid certificates, product's technical matching



1st Price Comparison and Negotiation

- Received quoted price were benchmarked between two suppliers for each product and calculated cost-saving value
- Transfer product sample for testing and qualifying from end-users
- Revised request for quotation with proposed discount percent and additional requests`



2nd Price Comparison and Finalization

- Received edited quotation from suppliers and calculated new cost-saving percent then benchmarked the final total cost from each supplier to choose the best one
- Testing the sample of standardized products by qualifying and experimenting
- Final selection with supportive documents in cost-saving calculation, final selected quotation and estimated volume purchase



Got approval from key stakeholders (head of user department, payable accountant), project manager and purchasing manager

- Pricing details with one-year estimated purchase order value for each items and final selected supplier for bundling were awaited for approval



Contract Management and Supplier Relationship Management

- Each approved final supplier for packaging materials and safety gloves was binding with frame agreement (general regulations and conditions) together with a price agreement for one year period (detailed agreed price lists, discount offering if exceeding certain quantity and conditions in warranty, delivery and product return in case of defective detection)
- Evaluated supplier performance based on pricing criteria and cooperation during negotiation process.

Figure 8. *Supplier selection procedure by centralized purchasing unit of company X.*

5.4.3 Procure-to-pay process implementation

According to the project manager, Procure-to-Pay process is the most popular model to manage the efficiency of MRO procurement. This process is to integrate all the internal parties who are involved in the entire procurement and supply chain of MRO items so as to acquire a seamless working and management flow within an organization. Moreover, the project leader also mentioned that “MRO items are often stored in the inventory with large SKUs quantity, and its decentralized purchasing activities forced me and other buyers to work intensively to perform repeated and time-consuming transactional activities, as well as to follow up with the issued purchase order. Therefore, I cannot handle the strategical decisions such as negotiating, contract management, SRM and cost saving report efficiently. Thus, applying Procure-to-Pay process can utilize all advantages of centralized procurement and mandate other responsible parties to join in the procurement process.”

Following the Procure-to-Pay process delegated by the project manager, centralized MRO items, after completed with the sourcing phase, were transited to the purchase order issuance step. Enclosed with a one-year price agreement, a framework purchase order was created by the project leader, after getting approval for the supplier selection phase. Differing from the standard POs, which specified order details including delivery expectation, quantity, and prices, the framework POs only enclosed with items description and estimated one-year requested volume proven by agreed price agreement number. There were no price or delivery time mentioned in the framework PO. This type of PO was only an informing paper of when purchasing period began so that suppliers could well manage its production capacity and buyers can base on the framework PO to control all the call-off orders performed by end-users. If there were more demand exceeding than framework PO forecasted, the buyer would be alert to place ad-hoc orders or renegotiate the prices and

services with suppliers. When framework PO was released, call-off orders would be performed by end-users of packaging items and safety gloves through means of E-procurement application. The call-off orders described details about the ordered item, its value and volume purchase, following with an expected delivery date and the receivers' contacts. The process of how E-procurement functioned in supporting users to place call-off orders is elaborated on the next part.

The next phase in the Procure-to-Pay process, after the Purchasing phase, was Logistics where the supply chain design for MRO items was optimized. Both packaging materials and safety gloves were assigned with new spare-part numbers so that Logistics member can track down and record the inventory adjustment. Moreover, after the final supplier was officially selected, new info record must be maintained to update from two suppliers for each product type to a new finalized one with newly offered price per unit. Without updating material's price, technical details, and supplier info immediately, logistics planner did not know how to contact with the right product provider to resolve logistics-related issues. More harmfully, the old pricing data, which was recorded in SAP system before the new centralized price, would be tangled up, resulting in statistical frauds in the total accumulated annual cost and spending data accuracy.

According to the logistics planner who was responsible for the inventory level of MRO items, she was in charge of receiving ordered items which were transported from suppliers' sites and managing the inventory level for packaging materials and safety gloves in warehouse by using SAP system. When items were recorded as successfully received and embedded in the warehouse data, ERP system signaling E-procurement solution to confirm the accomplishing delivery. After that, the payable accountant can compare e-invoices from suppliers with the actual call-off orders from end-users to proceed with payments. Logistic function played a fundamental role in maintaining the seamless supply chain flow for MRO items because end-users cannot use up all packaging materials or gloves immediately after items were distributed. A great number of SKUs were kept in the warehouse for later and on-

demand usage. Once the inventory amount for both items was at low-level and ready for next call-off orders, the logistics planner would be announced with the re-stock notifications from ERP system. Then they contacted with end-users to place next call-off orders. More tactically, logistics team consulted end-users to determine adequate and optimal ordered quantity so that items were always available and at the lowest inventory holding cost. From the buyer side, the project leader also constantly kept in touch with the logistics planner to get forecasted demand, actual consumption, and service feedbacks for suppliers. Thereby, the project leader can keep track of spending data and evaluate supplier performance effectively to prepare for next year order decision.

5.4.4 E-procurement installation

When all master database stimulated from the centralized procurement were completely updated, and relevant assignments were coherently allocated to responsible key stakeholders, E-procurement solution was carried out. Table 7 described the multiple functional activities of E-procurement together with desired profits achieved from this IT tool.

Table 7. E-Procurement implementation in company X.

E-procurement	Expected benefits
<ul style="list-style-type: none"> • Purchasing centralization • E-catalogue orders • Information technology support • Spending report • E-invoice execution 	<ul style="list-style-type: none"> • Volume consolidation • Efficiency and compliance • Operational support • Cost and savings transparency • Optimize payment of invoices

E-procurement is a solution to optimize transactional ordering activities for packaging materials and safety gloves of company X by consolidating, controlling and allocating item total volume. Thereby, call-off orders were performed by end-users through e-catalogue, the backbone of E-procurement solution. E-catalogue

was a customized list of supplementary items under packaging material and safety gloves groups and customized by the project leader. After the final supplier was selected for each product group, final prices together with item descriptions were closed up. Then the project leader filled all these information in the e-catalogue list and sent back to the Information Technology Support team to synchronize this e-catalogue to the E-procurement background database. Meanwhile, such critical information like vendor contacts for call-off orders request and invoicing information was connected with ERP system for logistics, procurement and payable accounting so that the database platform was persistently robust and always upgraded interactively and simultaneously. The merits of E-catalogue order were the efficiency in placing orders and the employee compliance to the purchasing policy for avoiding Maverick buying behavior when end-users or buyer lack of accessibility to agreed contracts.

E-procurement is a user-friendly tool that end-user can easily place an order like shopping online. He or she could choose the wanted items from the e-catalogue list under the packaging material or safety gloves category, with relevant sizes or colors, and then select the quantity to show the total order value before checking out. After the call-off ordering request was completed, a message would be sent to the end-user personal working email for order review and confirmation from suppliers to inform about the order status. E-procurement could be imagined as an online shopping site which has a personal shopping cart for online shoppers to buy quickly and automatically. However, in each end-user department, there were only two to three employees who had the authority to use this tools, for safety and guideline reasons. The project leader, after being trained by key buyer about the usage guidelines, also conveyed the instructions and coached end-users to get acquaintance with using E-procurement.

By automating the transactional activities, the project leader can focus on more strategic activities including sourcing, negotiating, contracting and managing supplier performance. More tactically, the project manager and key buyer made use

of E-procurement as an introductive tool to enhance spending transparency and cost-saving visibility to analyze quickly and seamlessly spending reports. The following Figure 9 visualizes and connects the participations of different parties in the E-procurement process.

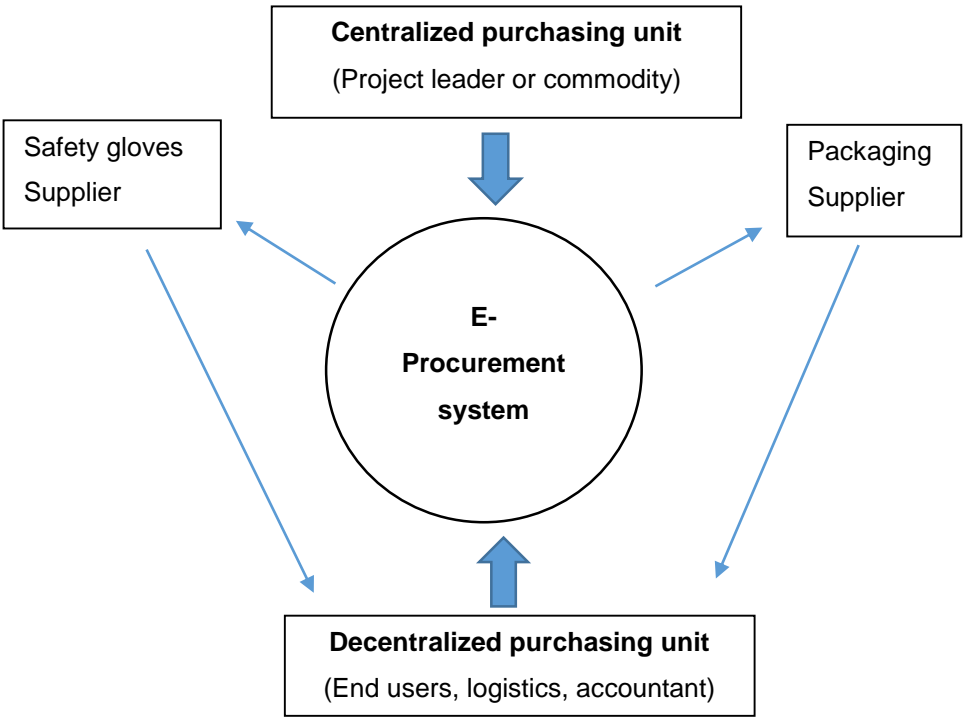


Figure 9. Centralized procurement via E-procurement illustrated model of company X

5.5 Project operational problems and project management

Based on the face-to-face interview with project leader, she mentioned the two instant, operational problems occurred right after the centralization execution process was roll-out. There were two main issues attributed internally by end-users' resistance to cooperate with new procurement model and externally by suppliers' avoidance to cooperate with E-procurement deployment. In terms of internal customers' perspectives, the utmost challenge is to change the working style. Since any changes take long time and resilience before seeing the explicit operational end-results, forcing end-customers to learn how to use new system and putting more

administrative work on their shoulders were understandably to be keen on. The second obstacle with end-users was in communication. In the context of centralization procurement, one of its disadvantages is the distant contact between suppliers and customers because most of the changes in prices or products feedbacks would be bridged through buyers. Moreover, company X has a cumbersome organization structure. Consequently, conveying the communication smoothly and persuasively required motivation and cooperation from both buyers and customers. The project leader emphasized that in the supplier selection process, the complex procurement organization with strict purchasing compliance caused a long-line approval for framework PO and complicated experiments on new standardized glove items. Table 8 summarizes the three most critical end-user problems occurring in the project.

Table 8. Company X's end-user problems during project.

END-USER ISSUES	IMMEDIATE PITFALLS	FORESEEABLE PITFALLS
Working culture	Resistance to change old purchasing habits	Slowly reaped highest results in cost savings and utilized E-procurement
Communication	Retarded and mismatched information	Key stakeholders not catch up with latest announcements
Long approval and testing process	Delayed targeted timeline and backlogs	Demotivated and lost credits in suppliers

From suppliers' side, they recognized that by conducting E-procurement system, company X can well manage the spending and consolidate all the purchased volume, invoices and order placements. Thus, suppliers feared that company X was spurring them to the corner and controlling their transactional activities, and they had fewer chances to get higher quoted prices. Besides, local suppliers who provided the packaging material and safety gloves were uncooperative in updating the information for e-catalogue. This indicated that even when the supplier production was run out of capacity, suppliers delayed informing the project buyer with the

adjusted available quantities, resulting in late delivery of stock-out items. There was also another issue in technological compatibility between company X and its suppliers. Sometimes, the system was lag and disrupted, causing late or none transmission to suppliers' emails. Detailed issues with suppliers while working on the project are listed in the Table 9 below.

Table 9. Company X's supplier problems during the project.

SUPPLIER ISSUES	IMMEDIATE PITFALLS	FORESEEABLE PITFALLS
Suppliers' postpone in updating e-catalogue information	<ul style="list-style-type: none"> • Items out of stock remained available in e-catalogue • Sudden price changes were not informed directly to responsible buyer but through end-users 	<ul style="list-style-type: none"> • Delivery delayed or ordered products are not even delivered • Spending fraud in accounting, logistics and procurement master info database
Incompatibility with suppliers' technical system	Lagged or unfinished call-off order processing	Demotivate both internal and external users
Suppliers' passive and uncooperative in the project	Resistance in adapting with new purchasing model	Fragmented platform for long-term relationship

After the first meeting of project leader with project manager when project problems were stated, the second conference call was arranged one month later when both discussed the resolutions and actions to be taken to conquer project challenges. Project manager emphasized the three key steps in managing the operative supplier relationship: on-boarding, catalogue content, and measurement.

According to the documented solution provided by the project manager, in the on-boarding phase, the in-person kick-off meeting, project leader of company X would

introduce the new centralized procurement process and particular employees' roles. By doing that, suppliers could know whom they should contact with for inquiries and which procedure they should align with. Then suppliers were trained with the E-procurement solution about its functions, operations, and simulation of how exactly orders and payments were carried out. It was crucial to mention about the contracts which were the platform and prerequisites to create the catalogue items, price, quantity, and other terms and conditions as agreed. All the guidelines and instructions were visualized together with paper- printing instructions to make sure all the process was well conveyed and to avoid unnecessary time for retraining. Moreover, the project manager thought that this would be a good chance to revolutionize the traditional partnership management in company X with the strategical corporative supplier management. In the face-to-face meeting, project leader would be expected to emphasize clear objectives and incentives of E-procurement and centralization process. By sharing open information, suppliers had a chance to share their thoughts or concerns about the project so that both sides could jointly find resolution which can help both sides to reduce cost and increase profit margin.

The second phase was the KPI measurement for catalogue content, a metric to evaluate the supplier performance. In this phase, performance indicators were calculated based on suppliers' compliance with the accorded update timeline, the number of frauds in stock-out events, or wrong order delivery reported by end-users. The final phase is the measurement which is to evaluate suppliers frequently and share the results with them. A measure for supplier performance entails with suppliers' capability of justifying E-procurement requirements such as catalogue content updating and electronic document handling. If these provisions are crossed within a specific period and evaluated with high rating scores, suppliers will get more bonus. If not, they will be penalized.

The most notable challenge in E-procurement deployment was the resistance of end-users buying behavior. Changes cause suspiciousness and leads to

demotivation. In other words, established goals and set-up process were not enough without leadership’s motivation and enforcement to push up end-users to overcome their conservation. Therefore, after defining the strategy for supplier management, the project leader and the project buyer switched to four important areas to focus on tackling challenges in change management. The first focus was in communication to increase motivation because clear communication in a project implementation was not an easy task and required a communication mechanism. The second is training to build up new adaptive skills and competences. Third is perseverance to understand that all the change needs long-time and patience. Lastly, visible result, such as KPI measurement, was a tool to inspire not only end-users but also suppliers about what results they have reaped during the project so far. Table 10 outlines these four main areas to help change the end-user behavior.

Table 10. Solutions for solving the end-users problems during the project.

END-USERS CHANGE	IMPLICATION AND PROCEDURES
Communication	<ul style="list-style-type: none"> • Used appropriate communicating channel: intranet site to post latest project proceedings. • Keep constant contact and information exchange through direct phone calls or meetings.
Training	<ul style="list-style-type: none"> • Keep it efficient and less time-consuming by using training model: “train the trainer” by selecting best-suited employee who can successfully digest the training concept and able to perform trainings to others properly.
Perseverance	<ul style="list-style-type: none"> • Leave sufficient time to complete change. Results cannot be rushed and seen immediately without resilience and patience devoted to make a new process.
Visible results	<ul style="list-style-type: none"> • Promote and disseminate positive results internally and externally. • Provide feedbacks to suppliers and end-users quarterly by using KPI facts.

5.6 Summary of the project results

Table 11. Centralized MRO procurement model of packaging and safety gloves in company X (AFTER PROJECT)

MRO ITEMS	CENTRALIZED PROCUREMENT ACTIVITIES	SUPPLIER BASE
PACKAGING MATERIALS AND SAFETY GLOVES	<ul style="list-style-type: none"> • Total bundled order quantity per transaction is estimated with roughly five thousand units for wrapping packaging, and about two hundred thousand units order per year for blisters • Total bundled order quantity per transaction is estimated with nine thousand pairs of glove • Transactions occurs quarterly for two types of product. • Each item is assigned with new part number and recorded with new price and new supplier. • Safety gloves specifications were standardized from four different types to two. • Central purchasing performed the spend analysis to consolidate orders and negotiate to select best suppliers, and created framework agreement. • End-users used E-procurement to directly buy from suppliers by call-off orders • Invoices amounts are reduced and matching the billings with invoices was quicker and lessen the statistical frauds 	<ul style="list-style-type: none"> • The wrapping materials were purchased from one supplier only who offers discount equivalent 10% cost savings. • The blisters were switched to a local supplier who offers 15% discount if purchased volume cross the minimum required purchase volume. • The safety gloves were purchased by an international supplier in Vietnam who corporate with R&D and end-users to reduce the variance in gloves specifications.

This section aims at summing up the centralized procurement results to compare with the pre-mentioned decentralized procurement pitfalls undertaken by packaging materials and safety gloves. As can easily be seen, all the advantages of the centralized procurement, including volume aggregation, product standardization, automation transactional activities, strategical management and supplier reduction were fully achieved. The success of transforming decentralized to centralized procurement model was most visibly proved with an estimation of cost saving percentage when project leader successfully negotiated for lower unit prices after bundling the order volumes and creating a framework contract. (Table 11)

6. Discussion

The case study which was supported with the theoretical literature has successfully answer three research questions. Firstly, the empirical findings demonstrated a standardized centralized procurement process for MRO items, but emphasized on two most potential items which were packaging materials and safety gloves. Thereby, the case results could realistically prove useful consequences in terms of cost-saving increase and other strategical outcomes. In a nutshell, the project was implemented effectively and yielded more superior benefits compared with those of the old model. Therefore, after the process is further improved to tackle the operational problems with end-users and suppliers, it can be set as the guideline and applicable for other MRO items such as petro chemicals to transform to centralized procurement. However, the process for centralization takes a quite long period (approximately half a year or more) to complete, buyers and purchasing manager only use this model under significant considerations and for prudently selected MRO items which can meet the conditions for centralized procurement. Even though the concept of Procure-to-Pay process and E-procurement tools are applied in the case study of company X exactly as what the theories recommend, the actual E-procurement application has a different feature from that of the theory. While the theory suggests the e-catalogues should be directly synchronized and

adjusted by suppliers, company X inserted the products database to the e-catalogue by itself with the help from ICT service. It only lets the supplier inform about the price change or quantity capacity in advance so that the project manager could verify the modification and retailer the catalogues. By doing this, company X can avoid the incidents when supplies make use of the automated system and manipulate the products price and quantity availability by themselves in order to achieve own benefits. Compared with the brief purpose of spend analysis in the theoretical framework, the actual analysis is constructed with a clearer and more detailed process.

Secondly, the planning phase in company X's process holds the same common philosophy with theoretical reviews, explaining the reasons why MRO items are suitable for the centralized procurement project. Such general considerations and Kraljic matrix are practical in use and correlated with theory recommendations. Thirdly, the project's operational challenges are somehow reflected by the theory, but discussed more in detailed what exact operational challenges occurring during the centralization process. Thereby, the project management part provides the answer for the third research question of how company X can tackle the project-related problems. Though the company X's solutions for project management are somehow similar with the theoretical review, it offers new information relating to the specific improvement of E-procurement, such as the KPI performance of suppliers' E-procurement integration. Though the theoretical recommends to use the supplier scorecard to fully and quantitatively evaluate the suppliers' performance during the centralized procurement process, company X actually used only a primary KPI E-procurement metric, not a completed scorecard. Therefore, this KPI metrics may be considerable to structure to a full scorecard evaluation in order to achieve the long-term benefits and sustainable development of supplier relationship management. Additionally, for the improvement aspects in term of end-users, beside leadership skills, other solutions are also added, including training, perseverance and visible results. To sum up, the author creates a SWOT analysis to evaluate the strength,

weakness, opportunity, and threats of the project of centralized MRO procurement. (Table 12)

Table 12. SWOT analysis to evaluate the project performance in case company X.

POSITIVE	NEGATIVE
<p>STRENGTHS</p> <ul style="list-style-type: none"> • Off load unnecessary transactional for strategic buyers • Clear Procure-to-pay process optimize supply chain and directly enhance productivity of purchasing department • Centralized process are clearly defined and arranged with specific personnel's roles so project members can follow the right track • Increase cost saving, reduce supplier base, enhance spending visibility and mitigate Maverick Buying. 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Weak communication and lack of leadership presence and influence from purchasing manager • Key stakeholders not actively push up process proceedings, approval and sample testing • Suppliers defiance (e-catalogue update, invoice billing, cooperation in responding to e-orders) • E-procurement portal is unstable and inconsistent in pricing and available quantity
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Replicate same centralized process to other appropriate MRO items and ORM items • Extend cross-functional integration and co-operation within company X organization • Strengthen SRM by developing supplier business capability of new IT technology and maintaining long-term relationship 	<p>THREATS</p> <ul style="list-style-type: none"> • Insignificant results and incremental systematic frauds demotivate end users. • Changes in human resource misplace the adequate training skills • Expected benefits cannot be acquired in the long-term

7. Conclusion

The purpose of this thesis was to document a standardized and effective process to carry out the centralized MRO procurement in company X. The thesis also provided

the motivation and initiatives behind the decision of centralizing indirect procurement for specific MRO items, and explained the purpose and deployment of supporting strategic tools and models to be used in the centralized procurement process. Moreover, the thesis offered improvements to tackle operative challenges attributed to project implementation. In a nutshell, the ultimate aim was to propose a reference centralized purchasing process that was successful to two most representative MRO items in particular, and applicable to the procurements of other MRO items in general. The research approach used in this thesis was case study supported with the qualitative research including observation, question forms and interviews.

This thesis stimulated other equivalent topics for analogous studies relating to the project. These topics could be: standardized model of centralized procurement for ORM materials, research plan on how to improve and utilize e-procurement as an enterprise-wide supporting system, data-embedded plan on how to embed item information directly from procurement account in ERP directly to e-catalogue database for automatically synchronizing, examination of total cost benefits recognized through procurement centralization and research plan on how to mitigate risks from reducing supplier base to support centralized purchasing.

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Face-to-face interview on 1st June 2015 with Assistant Purchasing Manager of company X.

Meeting on 23rd June 2015 among key stakeholders and Assistant Purchasing Manager of company X.

Face-to-face interview on 3rd August 2015, with Logistic planner of company X

Face-to-face interview on 24th August 2015, with Purchasing Manager and Assistant Purchasing Manager of company X.

APPENDIX 1 : INTERVIEW TRANSCRIBED

Interview with Project Leader Mrs. Tu Phuong

1st June 2015, at the meeting room

Interviewer: Huong Hoang

HH: Please tell me the details about the centralization procurement project that I am joining in?

TTP: The project started since April 2015 when I had a monthly meeting with our company lead buyer located in Thailand. She was recognized the aggregated huge volume in the packaging materials and safety gloves when summing up all the scatter orders purchased by end-users monthly. Then she questioned me about the current number of suppliers for these two items. Moreover, I told her that we have difficulty in handling such a vast range of suppliers for MRO items, especially these two items. Letting the end-users chose their own suppliers and then required me to release PO after receiving PR takes me a lot of time to do the transactions, comparing the PO details with those PR before releasing the PO. Then I also have to follow the PO receipt. I told her that I cannot handle such unnecessary administrative tasks at the same time with sourcing for suppliers, maintain vendor master list and maintain info record for spare-part items. I told her about that managerial issues many time previously. Then she replied that she discussed about the unwanted cost saving decrease in MRO procurement and your wasting resource with our firm's internal consultants. They recommended us to change from the decentralized to centralized procurement model. Though this centralized procurement model has not been written as formal guidelines in our company, she told me briefly about it and how should we do it.

HH: Could you please explains me more detailed about the process for this centralization procurement for these MRO items?

TTP: Firstly, the key buyer asked me to perform a spend analysis to report the PO net value for the packaging items and safety gloves. Because according to our

experience, these two items are make up a huge amount in purchasing cost. Therefore, we want to focus on these two items first. The lead buyers also explained with me that based on the similarity, the potential of standardization, together the with the supplier market and volume aggregation, we can bundle these two products. After that, we applied the Procure-to-Pay model process which have been recently created as the guidelines for the effective procurement practices for MRO items in our company headquarter. At the same time, the lead buyer connected with the ICT department in India to help me launch the E-procurement portal and give me some guidelines on how to use this IT tool. We documents a process to follow and make a presentation to show that in the next meeting with key stakeholders. You can join me in that meeting to have a clearer view about the process.

HH: Can you please tell me why MRO items are chosen as the object for this project and how is Procure-to-Pay model can manage the supply chain flow for these items?

TTP: MRO items are often stored in the inventory with large SKUs quantity and its decentralized purchasing activities forced me and other buyers to work intensively to perform repeated and time-consuming transactional activities, as well as to follow up with the issued purchase order. Therefore, I cannot handle the strategical decisions such as negotiating, contract management, SRM and cost saving report efficiently. Therefore, applying Procure-to-Pay process can utilize all advantages of centralized procurement and mandate other responsible parties to join in the procurement process

HH: Can you give me more details about how to prepare the spending analysis, detailed information relating to the specific items under the packaging and safety gloves group?

TTP: I will instruct you more detail how to create a spend analysis after this interview (Smile). For your information, all the historical prices, suppliers and items details you can find it on the shared folder of our department. I will send you the link to get it later by email. Since you are still new there, you should read and understand some

guidelines relating to the sourcing process like sending RFQ, perform price of comparisons, how many quotations should we ask for and something like that. I expect that the old intern has trained you with some of this knowledge.

HH: (Nod) Yes, he did. However, I will look again the guidelines in our company portal. One more question, can you tell me more about the E-procurement tool?

TTP: (Smile) Have you bought something online through Amazon. This E-procurement tool functions the same. Each user has a shopping cart to place their own orders. They purchased on a fixed period with their demanding amount and items. Then they checked out and received the order confirmation from the supplier. This tool is conducted for this centralization procurement project. You can read more about its functionality and usage on the i-buy portal and ask me if you have any more questions.

APPENDIX 2: INTERVIEW TRANSCRIBED

Interview with Logistic planner Ms. Vuong Hue

3rd August 2015, by phone call

Interviewer: Huong Hoang

HH: Hi Ms. Hue, Thanks for your help to provide me with the end-user estimated consumption for the spare-part numbers of packaging materials and safety gloves that I sent you by email.

VTH: No problem. I hope that the spend analysis helped you to bundle the volumes significantly.

HH: Yes, the spend analysis yield great opportunity so that Ms TTP can negotiate considerable discounts. I heard that the blister sample and PET foil

rolls went quite well. How's about the test with the standardized gloves from the new local supplier?

VTH: Well, the gloves test takes quite a long time and experimenting levels due to its variance in specifications. However, luckily, we have completed the final result which is allowable for the new supplier to sell us the standardized gloves. It is good news, isn't it? By the way, have you helped me to maintain the info record for the packaging materials that have been bundled from two suppliers to only one supplier? I saw on the final quotation and price comparisons that the prices for each items have changed. Please help me to update those new price with new selected vendor's code.

HH: One quick question, can you tell me more about your role in this project?

VTH: Well, I help end-users to keep eyes on their inventory, receiving the delivered products than record it in the SAP system so that accountants can proceed payments. When the inventory has "low stock" signal, I emailed the end-used to place new call-off orders. I also actively involved in the forecast for end-user demand per year and define the safety stock level for those packaging and safety gloves products.

APPENDIX 3: INTERVIEW TRANSCRIBED

Interview with Purchasing Manager Mr. Nguyen Hung and Mrs. Tu Phuong
24th August 2015, at the meeting room

Interviewer: Huong Hoang

HH: Hi Mr.Hung, how is your opinions about this centralization project?

NCH: According to my constant supervising, this project has been effectively conducted. All the databased are well prepared, the supporting tools and model are clearly guidelines. Though the project extends for quite a long time, the final supplier eventually is selected. I can see the cost saving in the price comparisons. The

framework and price agreement are well prepared too. I think this is the most advantageous point of this centralization project. By assuring that a price is fixed with credible terms and conditions with suppliers, buyers and end-users cannot consciously or unconsciously commit the Maverick buying. You know that our firm is really strict with compliance.

HH: Can you explain me more detailed why should we choose MRO items to concentrate on this centralization project but not with ORM or direct materials?

NCH: The answer to this problem is explained by the Kraljic matrix. This model is really famous in procurement field because it helps you to classify products into four main categories. Thereby, each category has separate management style so as to maximize the purchasing profits but mitigating the supplier risk. Specifically, Kraljic defined MRO items as a suitable ones for centralize procurement decision. We also considered other conditions to perform centralization for packaging materials and gloves. I think Ms.TTP mentioned with you about it. So I can skip it.

HH: Can you tell me about some challenges that occur with the project implementation so far, Mrs. Phuong?

TCP: Mostly, the problem is the resistance to change from the end users and suppliers. End users think that they lose autonomy in select their own suppliers and why purchasing tasks now have to put on them. Suppliers think that using new procurement forces them to discount the prices and control their business. However, I think that this is a good chance to rewrite the cooperating with suppliers. In such globalization trend, SRM is moving towards the cooperative collaboration which requires both sides to open and strive to deliver the value, not just create the value.

HH: Is there any solutions that are provided so far?

NCH: Yes, of course. I together with Mr NCH and the key buyer had a strategic meeting with the consultant team. Together, we brainstormed with some solutions that are well planned and structured so that project leader can use them to tackle the operational problems. I will send you the project solutions plan that we created.

APPENDIX 4. TABLE OF PROJECT MEMBER ORGANIZATION

PROJECT MEMBER	KEY RESPONSIBILITY
PURCHASING MANAGER	<ul style="list-style-type: none"> Decision makers, influencer, approved final supplier, price comparisons, estimated one year bundled value, framework and price contract.
PROJECT MANAGER	<ul style="list-style-type: none"> Southeast Asia Lead Buyers of packaging materials and safety clothes: analyzed spending net value and cost saving generated, initialized and planned the project process, monitored the progress and consulted project leader in action plans.
PROJECT LEADER	<ul style="list-style-type: none"> Prepared historic database for possible supplies reduction of related items, bundled volumes, negotiated, created price comparisons, select suppliers, communicated with end-users for product standardization, launched new process and procurement tools, created contracts and managed performance of internal and external parties who involved in the projects.
KEY STAKEHOLDERS	<ul style="list-style-type: none"> Logistics planner: delivery of purchased products, inventory management, order fulfillment, control of estimated and actual consumption, records of goods receipts for accounting. End users: defined specification needs, cooperated to standardize product requirements, estimated annual consumption, examining and testing new standardized products, follow the project guidelines and action plans. Payable accountant: managed the invoices and new payment process formulated by the project.