MASTER OF BUSINESS ADMINISTRATION

MANAGEMENT CENTER

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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The Supplement of E-procurement Database in Ajinomoto's Engineering Purchasing Activity

BY

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION

MANAGEMENT CENTER

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

20 JULY 2002

Abstract

In this work, the process of procurement in a typical organization has been studied. The conventional processes have been reengineered to suite the E-environment. This project paper intends to design an E-procurement Database used in purchasing activities. In order to prove the validity of the design, a prototype has been developed. The development of the E-procurement Database is under the Microsoft Access Database platform because it is commonly used in the market. The main reason of this project paper is to let the reader understand the benefit of this inevitable procurement procedure transformation in the business world. The design of the E-procurement Database will follow the **Standard System Development Life Cycle (SDLC).**

Approval Page

Title of Project Paper:

The Supplement of E-procurement Database in Ajinomoto's Engineering Purchasing Activity

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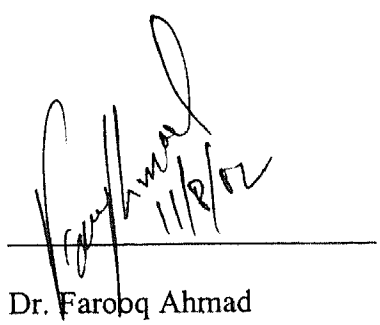
The undersigned certify that the above candidate has fulfilled the conditions of the project paper requirement in partial fulfillment for the degree of Master of Business Administration.



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Declaration

I hereby declare that this project paper is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by references notes and a bibliography is appended.

Name: CHAN CHEE HONG

Signature: _____ Date: 20 - JULY - 02.

Dedication

To my beloved mother.

To my beloved father.

Acknowledgments

First of all I would like to express my utmost appreciation to my supervisor, Dr. Farooq Ahmad for his advice and guidance. He had shown his commitment towards his student although he is also busy. Besides, he also arranges many discussion sessions during the project period. He is caring enough to provide information and idea for this project paper. I would like to thank again my supervisor for his effort of guiding and sharing his knowledge with me.

I should also not forget my friends and colleagues who were with me all the way to make this thesis a successful one. And last but not least, I dedicate my sincere appreciation to my family for their love, patience and support. Without them, I would not be able to go through all the hard times.

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CHAPTER I: INTRODUCTION

1.0) Introduction

Typically, organizations spend between 50% - 70% of their revenue on purchased goods and services. Policy makers are well aware of the opportunities provided by information technology to streamline the procurement process through adoption of **Electronic Procurement (E-procurement)**. E-procurement certainly offers the potential for significant efficiency gains, but not without attention to the role and development of purchasing as a core capability of the organization. By removing the administrative burden of order placing and providing improved management information, E-procurement provides a powerful platform from which to exploit the organization's **strategic leverage** and undertake major total **supply chain** cost improvements [1]. With out a **strategic capability** in procurement, organizations are unlikely to gain any significant benefit from e-procurement in the long term. Most of companies achieve significant savings by utilizing E-procurement strategies (see figure below).

Table 1.1: Benefits Realized Through E-Procurement

	Traditional/Manual	Internet
Price of materials and service		5% to10% reduction
Purchase and fulfillment cycles	7.3 days	2 days
Administrative costs	$107 per order requisition	$30 per order requisition
Inventory		25% to 50% reduction costs

Source: Price Water House Coopers [2]

The *first wave* adopters of E-procurement technology saw the clear advantages inherent in the automation of purchasing processes, which serves to introduce efficiencies and empower personnel [3]. The elimination of tedious and unnecessary paperwork alone is of enormous benefit to purchasing personnel, who can adopt a more strategic role in their tasks and drive their departments in a proactive, rather than reactive manner. In addition, the implementation of E-procurement has been proven to create savings that go straight to the bottom line.

The *second wave* of E-procurement has already begun to make itself apparent in the market, but that it is not actually about E-procurement itself [3]. It is about a wider view of transaction between purchasers and suppliers in general, which is called **E-business**. The urgent need to encourage supplier participation is seeing a take-up in systems that drive value to each member of a supply chain, instead of trying to concentrate it onto one side or the other.

The salient work on this project paper is to design a prototype of E-procurement Database used mainly in purchasing activities. The development of the E-procurement Database is under the Microsoft Access Database platform because it is easily available in the market. Besides, Microsoft Access is very well known by most of the people and it is simpler to use compare with other complex database developer platform. The main reason of this project paper is to let the reader understand the strength as well as benefits of this inevitable procurement procedure transformation and innovation in the business world. However, this paper will provide step-by-step method of database development

process, which will ensure proper design start from the beginning toward the end. The design of the E-procurement Database will follow the **Standard System Development Life Cycle (SDLC)**.

The database development project paper is organized into ten chapters. The first chapter discusses about the introduction of this project paper. Besides, this project paper also discusses the current trend and utilization of E-procurement. First chapter also shows the general benefit of E-procurement realized by the companies. After the introduction chapter, the second chapter discusses the first stage of SDLC, which is **Project Identification and Selection**. The weaknesses of conventional procurement and the strength of E-procurement are also described in detail. It will be follow by the literature review of E-procurement.

Chapter three discusses the second stage of SDLC, which is the **Project Initiation and Planning**. Chapter four discusses the third stage of SDLC, which is **Initial Analysis** Stage of the project. Chapter five discusses the stage four of SDLC, which is the **Conceptual Database design,** the main design of the whole database development project because it will ensure the effectiveness of the database. Chapter six continues with **Logical Database Design** stage but emphasize in the process normalization of Ajinomoto E-procurement Database E-R diagram. Chapter seven illustrates the stage five of SDLC, which is the **Physical Database Design** of the E-procurement Database. Chapter eight discusses the stage six and stage seven of SDLC, which is the **Implementation** and **Maintenance** stage respectively. Finally, Chapter nine

will conclude the entire project paper and propose future study to ensure continuity of the project.

CHAPTER II: PROJECT IDENTIFICATION AND SELECTION

2.0) Project Identification

Procurement strategy is from the identification of requirements through the fulfillment of demand. This topic involves design and development of **E-Procurement Database System,** which contributed to the procurement strategy. This study will provide guideline for engineering procurement standard and to describe the usage of purchasing database system involved in procurement activities.

A demo prototype of E-procurement Database software (developed under Microsoft Access platform) will be attached at the end of this project paper. This E-procurement Database is developed for Three Tiered Client-Server LAN system. Cross-functional departments can share this database information for daily procurement activities.

Note: E-procurement is a group-ware level of database design. The Microsoft Access developer is easily available in the market and the cost is very much lower compare with other Database Management Systems.

2.1) The Need for Improvement in Conventional Procurement Procedure

There are many disadvantages practiced in the conventional procurement procedure. Most of the time, conventional procurement incurs a tremendous high cost in various aspects and consumes a significant part of organization's resource allocation.

With the advancement in information technology, procurement activities had experienced many changes contributed by the innovation or breakthrough of Information and Communication Technology (ICT). Obviously, the advantages of E-procurement in procurement activities are clear and can manage to overcome most of the conventional procurement shortages. In order to understand the difference between E-procurement with conventional procurement procedure, a study of the strengths and weaknesses of respective procurement methods is shown below:

2.2) The Weaknesses of Conventional Procurement Procedure

a) Process of documentation becomes complex. For instance, purchase order, job order invoice and delivery orders are kept in many files manually. Documentation of such documents is normally based on date of issue. Any other kind of sorting and filtering becomes a tedious work and might cause confusion. Information of purchasing history cannot be made available in time for decision-making by top management.

b) Paper had been used intensively for every step of procurement. Systematic filing is necessary and adequate space must be provided for filing. Some filing history is kept for five years duration. Some other prolongs to seven years of filing.

c) Conventional procurement requires extensive manpower to maintain proper filing, documentation, compilation, sorting process and so forth.

2.3) The Strengths of E-procurement Database

a) The E-procurement system will reduce processing cost. The usage of paper will be reduced tremendously. Besides, manpower that is required to operate the system will be at minimum manpower level. Rationalization of manpower can be implemented after replacement of conventional manual procurement activities with E-procurement system.

b) Implementation of E-procurement will also reduce cycle time. Time required from the purchase request stage until procurement stage will be shortened and become more effectively. As a result, it should simplify and accelerate procurement process. [4]

c) E-procurement establishes more integrity between cross-functional departments.

d) E-procurement will be more transparent. Any kind of purchasing history can be tracked easily.

e) Reengineering the purchasing procedure and procurement procedure. E-procurement can facilitate the ISO activities in the company and can replace legacy system.

f) E-procurement can improve ease of use and customer satisfaction.

g) E-procurement can reduce inventory by updates and provide real time inventory control.

h) E-procurement can increase compliance with the use of leveraged contracts and minimize maverick purchases

i) E-procurement improve supply chain integration

2.4) E-procurement Database: The New Trading Revolution

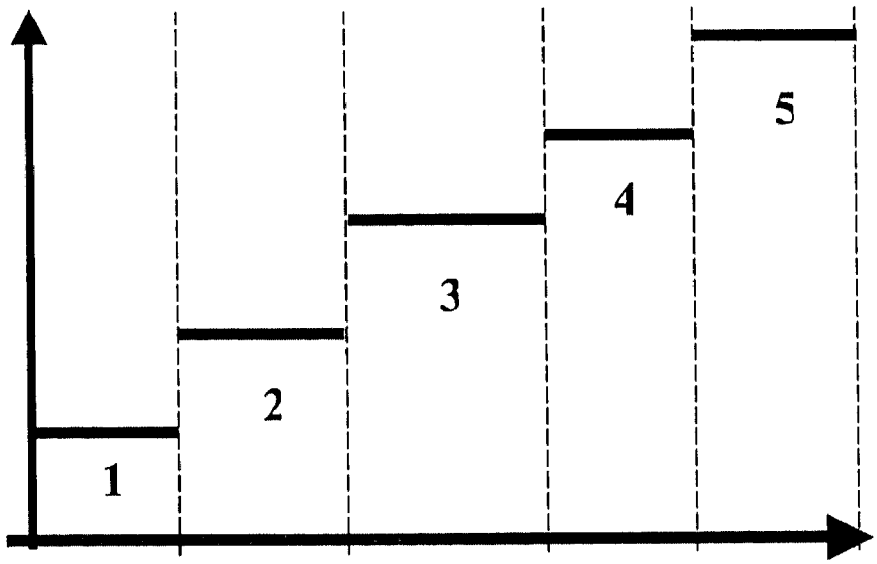
E-procurement database is currently the fastest growing area of business-to-business e-commerce. E-procurement database has brought a whole new perspective to traditional procurement practices. The popularity achieved by this solution stems from the fact that the procurement function experiences similar problems regardless of industry. This is particularly true when taking into account **MRO (Material Requirement Order)** purchases where purchasing patterns are similar. The main characteristic of the purchasing portfolio is being high varieties of non-standardized items. This goes to prove that the procurement process bears a heavy transaction burden, where there is no visibility of the total buying power. Having said that, Internet applications are capable of eliminating the administrative burden by giving appropriate managerial information to purchase managers. At the same time reducing ordering and tracking processes, which generate the administrative costs normally found for MRO items, along with increasing the number of supplier available for the organization.

2.5) The Business Procurement Life Cycle

Business procurement life cycles that have appeared in literature include a variety of phases that cover *sales, order processes, account management, negotiation and information gathering.* A five-stage model in the E-procurement context was developed. [1] For the buyer, these stages are activities that are pursued in acquiring goods and services to meet the requirements of the business. These stages are backed by separate

strategic objective during each phase. The procurement life cycle provides opportunities for a business relationship to begin, develop or decline. As seen from the customer's perspective, the **procurement evolution cycle** includes the activity stages shown in figure below.

Figure 2.1: Procurement in the E-Commerce Era – Five Stages of Evolution



Focus	B 2 B	B 2 B	Re-engineering Process	B 2 X	Transparency
Systems	Email, Web, EDI	CRM	ERP, Knowledge Management	E-Procurement	E-Fulfillment
Processes	Sales, Order taking, Payment	Account Management	Operation planning and control	Supply base management	Total logistics, Supply Chain Positioning
Strategies	Sales Growth	Key Customer Management	Operation Improvement	Procurement	Supply Chain

Adapted from Croom et al 2000 [4]

Each of the five stages is distinctive in focus, purpose and resource requirements. In the following table an insight into the key characteristics of each of the five stages is provided.

Table 2.1: Characteristics of Five Stages of Evolution

	Stage One	Stage Two	Stage Three	Stage Four	Stage Five
Objective	Improving ease of access to customer	Segmenting customers according to their strategic importance	Operations coordination, planning and control	Supply Management	Efficient Material Management
Key Enabling Resource	Channel Technology	Customer Intelligence	Process Data	Procurement Procedure	Logistics co-ordination
Typical Information System Used	Web site, Payment and e-mail	Customer Relationship Management	Enterprise Resource Planning (ERP) Knowledge Network	**Supply and supplier database** catalogue. Intranet	Order tracking. Global Positioning. Scanning and bar coding.
Operation Focus	Customer Access	Appropriate Customization	Process Efficiency	Total external expenditure control	Systems Transparency and integration
Primary Strategic Challenge	Credit Control	Customer Portfolio	Operation Cost	Total cost of acquisition	Availability

Adapted from Croom et al 2000 [4]

Naturally, organization may demonstrate evidence of activity in more than one stage, and will often be undertaking a variety of initiatives in each or most of these