

**Faculty of Technology Management & Technopreneurship**

**BENEFIT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM  
TOWARDS SUPPLY CHAIN PERFORMANCE**

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**BENEFIT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM  
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**A thesis submitted in fulfillment of the requirements for the degree of  
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**ii**

## **ABSTRACT**

This paper is mainly about Benefit of Enterprise Resource Planning System (ERP) Towards Supply Chain Performance. Through the function of Enterprise resource Planning system (ERP) we can increase the supply chain performance. For this research title survey have been conduct and separate to the employee manufacturing company who has experience in Enterprise resource Planning system (ERP). For this study primary data have been use. With this study we can see the correlation between Benefit Enterprise Resource Planning System (ERP) towards supply chain performance.

## **ABSTRAK**

Kertas kerja ini adalah sebahagian besarnya kira-kira Manfaat Enterprise Sistem Perancangan Sumber (ERP) Ke Arah Prestasi Rantaian Bekalan. Melalui fungsi sistem Perancangan sumber Enterprise (ERP) kita boleh meningkatkan prestasi rantaian bekalan. Bagi kajian ini tajuk penyelidikan telah kelakuan dan berasingan kepada syarikat pembuatan pekerja yang mempunyai pengalaman dalam sistem Perancangan sumber Enterprise (ERP). Untuk kajian ini data primer telah digunakan. Dengan kajian ini kita boleh melihat korelasi antara Manfaat Sistem Perancangan Sumber Perniagaan (ERP) ke arah prestasi rantaian bekalan.

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Finally to thanks to my course mate especially Siti Hajar Mohamad who help me to complete this project paper.

## APPROVAL

I hereby confirm that I have examined this project paper entitled:-

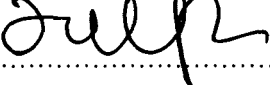
**“BENEFIT OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM  
TOWARDS SUPPLY CHAIN PERFORMANCE”**

By

**CHONG SIEW LEET**

I hereby acknowledge that this project paper has been accepted as part

fulfillment for the degree of Master of Business Administration

  
.....

**Assoc. Prof. Dr. Ahmad Rozelan Bin Yunus**

**Supervisor**

## **DEDICATION**

I would like to dedicate this research paper to my family especially my father  
and my husband whose give me support and encourage me  
to finish Master program and also  
thank you for my beloved family.





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## LIST OF ABBREVIATIONS

<b>ERP</b>	Enterprise Resource Planning
<b>SCM</b>	Supply Chain Management
<b>GSCF</b>	Global Supply Chain Forum
<b>IT</b>	Information Technology
<b>CRM</b>	Customer Relationship Management
<b>MRP</b>	Manufacturing Resource Planning
<b>APS</b>	Advanced Planning and Scheduling
<b>PLM</b>	Product Life Cycle Management
<b>BW</b>	Business Intelligence Warehousing
<b>KPIs</b>	Key Performance Indicators
<b>UK</b>	United Kingdom
<b>U.S</b>	United States
<b><math>\alpha</math></b>	Cronbach's (alpha)
<b>r</b>	Correlation Coefficient

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of the Study

Nowadays organization are facing stress with internal operations, boosting plant productivity, improving product quality, and reducing operation costs, organization are focusing on supply chain strategies as the next frontier in organizational. Markets are becoming more transparent, customer demands are increases therefore production need to be more productivity and to fulfill customer needs. All these developments are having a profound impact on the ways in which supply chains of enterprises are to be involved.

The globalization of competition means that apart from ensuring their own successful operation, firms that hope to survive must establish highly responsive supply chains. Increasingly, the management of multiple relationships across the supply chain is being referred to as supply chain management (SCM). On top of that, the supply chain is not a chain of businesses with one-to-one, business- to-business relationships, but a network of multiple businesses and relationships. Supply chain management (SCM) offers the opportunity to capture the synergy of intra- and intercompany integration and management. In that sense, SCM deals with total business process excellence and represents a new way of managing the business and relationships with members of the supply chain.



Supply chain management (SCM) is a new way of managing the business and its relationships. The Global Supply Chain Forum (GSCF), a group of non-competing firms and a team of academic researchers, has been meeting regularly for the past 6 years with the objective to improve the theory and practice of SCM. The Global Supply Chain Forum GSCF has define supply chain as Supply Chain Management is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders. The functions of supply chain represented by those included marketing/sales, logistics, manufacturing, information systems, finance, quality management, and strategic planning. Below is integrated model of supply chain.

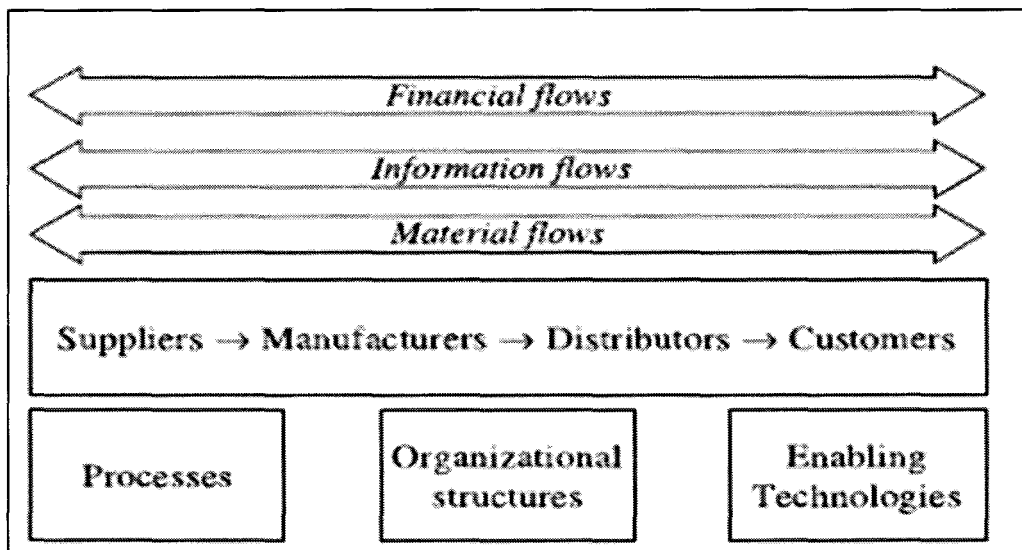


Figure 1-1 Integrated model of supply chain

From the Figure 1-1 show a supply chain as a network consisting of suppliers, manufacturers, distributors, retailers, and customers. At the operational level, this network supports three types of flows that require careful planning and close coordination:

- Material flows: which represent physical product flows from suppliers to customers as well as the reverse flows for product returns, servicing, and recycling;
- Information flows: which represent order transmission and order tracking, and which coordinate the physical flows; and
- Financial flows: which represent credit terms, payment schedules, and consignment and title ownership arrangements?

The network, in turn, is supported by three pillars:

- Processes: which embed the firm's capabilities in logistics, new product development, and knowledge management?
- Organizational structures, which encompass a range of relationships from total vertical integration to networked companies as well as management approaches, and performance measurement and reward schemes; and
- Enabling technologies, which include both process and information technologies.

Supply chain process are as follow : the purchasing department placed orders as requirements of material base on order from sales and marketing, after that responding to customer demand, interfaced with various distributors and retailers and to satisfy this demand. Orders were periodically given to suppliers and their supplies. Satisfying the customer often translated into demands for expedited operations throughout the supply chain as member firms reacted to unexpected changes in demand. Operating an integrated supply chain requires continuous information flows, which in turn help to create the best product flows.

The customer remains the primary focus of the process. Achieving a good customer-focused system requires processing information both accurately and in a timely manner for quick response systems that require frequent changes in response to fluctuations in customer demand. Controlling uncertainty in customer demand, manufacturing processes, and supplier performance are critical to effective SCM. In addition, the management has reached the conclusion that optimizing the product flows cannot be accomplished without implementing a process approach to the business.

Supply Chain Management are play important role in the business world so the manager of the organization are face stressful to improve supply chain management in the organization. As a result managers of organizations must use technology to improve firm and supply chain performance. What is the best way to improve corporate SCM capabilities in order to improve overall supply chain performance has therefore become

an important issue in corporate management (Park et al., 2005; Whit et al., 2005). Kuei et al. (2002) have pointed out, Supply Chain Management (SCM) is a business entities collectively responsible for procurement, manufacturing and distribution activities associated with one or more families of related products. Enterprises in the supply chain are likely to increase control over their suppliers and enhance their SCM competencies by gaining power from information. Supply chains are important to measure that the company more profitability and productivity. In supply chain management the emphasis is on how well a chain or group of companies perform in order to create value for the final customer (Brewer and Speh, 2001).

Information and communications technologies have become major components of the competitive strategy of many businesses. This strategic emphasis has made it possible for managers to integrate information and communications technologies throughout the organization and link all business units together.

To meet these new challenges and the need for a competent supply chain, companies around the world have invested heavily in Information Technology (IT), and take advantage of IT systems to radically alter the conduct of business in both domestic and global markets. Currently, a popular approach to the development of an integrated enterprise-wide system, the adoption of enterprise resource planning (ERP), is sweeping across industry (Akkermans et al., 2003). Many organizations have implemented company-wide systems called ERP systems, which are designed to integrate and optimize

various business processes, such as order entry and production planning, across the entire firm (Mabert et al., 2001). Through this system all information can be sharing within supplier to their customer. Enterprise Resource Planning (ERP) , which allows for the transmission and processing of information necessary for decision making, can be viewed as an essential enabler of SCM competencies (Akkermans et al., 2003; Hsu et al., 2009; Sanders, 2007). Firms deploying ERP systems considered extending system scope mainly to integrate their suppliers, customers or both to the system, to provide additional e-commerce or e-business operations and to increase supply chain functionalities (Olhanger and Selldin, 2003).

## **1.2 Function of ERP System**

Enterprise Resource Planning (ERP) systems, comprehensive transaction management systems are now in most of the organizations today and have become a defect to standard. When ERP systems are fully realized in a business organization, they can be expected to yield many benefits, such as reduction of cycle time, faster transactions, better financial management, the laying of the groundwork for e-commerce, linking the entire organization together seamlessly, providing instantaneous information, and making tacit knowledge explicit (Mabert et al., 2001; Davenport and Brooks, 2004; Shang and Seddon, 2000; Murphy and Simon, 2002; Al-Mashari et al., 2003).

ERP can provide the digital nervous system and the backbone in an organization to respond swiftly to customers and suppliers (Cox et al., 2000; Mabert et al., 2001). As reported in Akkermans et al. (2003), ERP systems are widely believed to contribute to SCM in technical areas such as standardization, transparency and globalization. ERPHaving achieved some level of integration within enterprise by implementing Enterprise Resource Planning (ERP) systems at great cost and efforts, many large organizations have moved on to address the supply chain to improve their performance.

ERP software solutions typically cover all basic business process/functions of any organization, regardless of the organization's business or charter. A typical ERP module include: Manufacturing, Supply Chain, Financials, Customer Relationship Management (CRM), Human Resources, Warehouse Management and Decision Support System. In addition Enterprise Resource Planning (ERP) system have play important role in the manufacturing company. Below are the role ERP systems in different function areas:

### **1.2.1 Finance / Accounting**

In the finance / accounting area, Enterprise Resource Planning (ERP) systems ERP can also assist a company in managing the organization cash flow. E- resource ERP Financial module is tightly integrated with all departments' functionality and generates valuable financial reports such as Profitability Report, Cost Center Analysis report,

Management Information Report. The financial module in e-resource ERP provides financial functionality and analysis reports for different departments and cost centers.

### **1.2.2 Human Resources**

Through ERP system have provide e-resource ERP Human resource Management is a suite of integrated solution, facilitates HR operations by reducing time-intensive administrative tasks and lowering costs by deploying self-service applications. E-resource ERP solution offers many different sub-systems under the HR module. The subsystems are Personnel Management, Organization Management, Payroll Management, Time Management and Personal Development and Recruiting.

### **1.2.3 Manufacturing**

In manufacturing function ERP system role as Manufacturing Resource Planning OR MRP II by ERP system is the original modality as ERP, and covered materials planning. Manufacturing module in e- resource provides a collaborative environment for performing manufacturing tasks. It contains the necessary business rules to manage the entire supply chain process whether within a facility, between facilities, or across the entire supply chain. It constitutes of number of functionalities, mainly, Bill of Material,

Engineering Change Note, Shop Floor Control, Sales and Distribution Plan, Master Production Schedule, and many more

#### **1.2.4 Supply Chain Management**

Enterprise Resource Planning will allow a company to successfully automate the process of buying materials and maintaining them. There are modules that track the supplies that are purchased and can also make calculations about how these materials should be distributed. It also becomes possible for a company to predict the demand of the market based on history, economic statistics, and data from their employees. They can even decide when a product should be produced, and they can do this based on the raw material that is available. Scheduling for shipment will provided customer.

#### **1.2.5 Customer Relationship Management**

Through ERP system provide the function customer relationship management. The modules have been installed to handle these customer service and customer feedback functions. ERP systems have been designed and developed by a wide range of vendors and providers, and each software suite involves its own set of programs, but the basic functions provided by most of these systems include customer ordering portals—often through web-based interfaces—and tools that allow a company to assist customers with questions and gather customer data. This data may provide information about



demographics, and it may also provide commentary on products. With an integrated ERP system, the data can be gathered, aggregated and stored in databases housed on a shared server. The databases can be accessed by marketing departments who can use both customer demographics and customer feedback to target campaigns and promotions. The ERP CRM data can also be accessed by sales teams who can use it to qualify leads and make more efficient use of travel, touches, and contacts.

### **1.2.6 Project Management**

Many companies are forced by market pressure or because of their basic business model to constantly introduce new products into manufacturing. This creates a communications overload between engineering and manufacturing. Today's integrated systems have tools that help manage the intense demands new product introductions cause. Project management tools for establishing milestones, work schedules, and budgets can be established for engineering projects. Using these tools, management has the visibility to make sure projects are completed on time and within budget. For some companies that have problems meeting new product introduction goals, this is a potentially big return.

Additionally, implementing engineering changes to existing products can be a big problem for some companies. Poorly implemented engineering changes will lead to large

amounts of scrap and obsolete inventory. Field service and reliability costs can become extreme if engineering changes are not managed well.

### **1.2.7 Software components of ERP System**

The software components of ERP system are subdivided into modules (see Figure 1-2). It is usually seen as the ERP product and several generic modules sold by ERP vendors. SAP is a clear market leader in ERP deployment. Gelinas et al, (2005:57) identified the core modules of SAP R/3 as listed below:

- **Sales & Distribution:** This contains the functions related to the sale of goods to customers and includes recording customers order, shipping of good to customer, and billing the customer. They are interconnected to the Material Management module to check the availability of inventory and record the issue of goods, the Financial Accounting module to record the sales and the Controlling module for profitability analysis.
- **Material Management:** This contains the function related to acquisition of goods from vendors and management of goods in the warehouse. This module prepares and records a purchase order, receives goods from vendors and record the vendors invoice.

- **Financial Accounting:** This contains the function related to business events from other modules such as Sales & Distribution and Material Management. This module records transactions into the general ledger accounts, external account statements, the balance sheet, profit and loss statement and statement of cash flows. This module also includes account receivables and account payable functions.
- **Human Resources:** This contains the function related to the recruitment, management and administration of personnel, payroll processing and personnel training and travel. The HR module is also used to maintain data related to training and work benefits.
- **Quality Management:** This contains the function related to product inspections, material certifications and quality controls.
- **Project Management:** This contains the function related to research and development, construction, marketing projects, cost settlement and project phases.

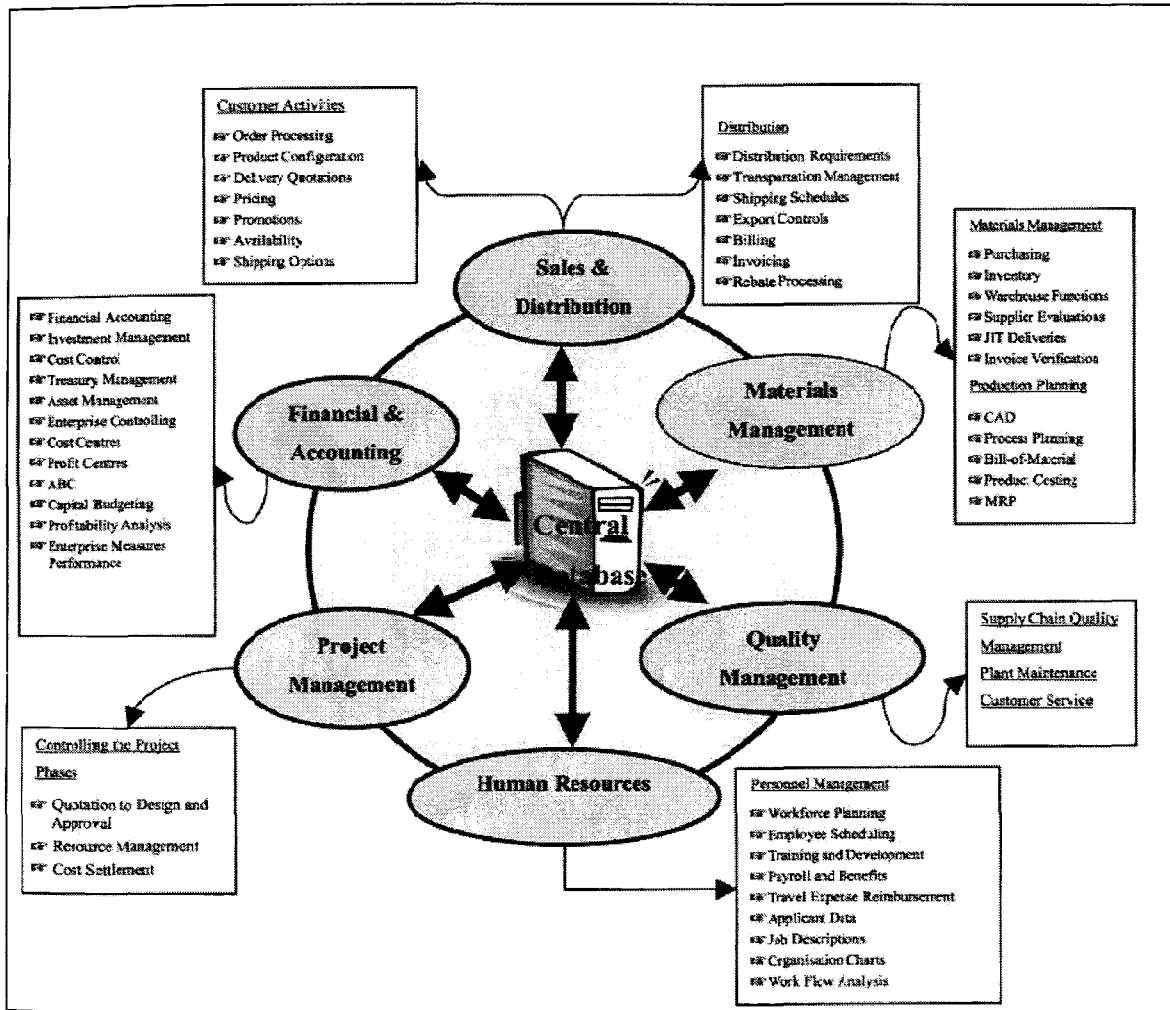


Figure 1-2: ERP System Module Adapted from *Shehab E.M et al 2004*

### **1.3 Research Question**

This research is significantly bringing a few research questions to achieve a goal of the study such as:

- (i) How does an ERP implementation contribute to make the organisation more effective?
- (ii) What is the firm supply chain management performance?
- (iii) What is the relationship between enterprise resource planning (ERP) towards Supply Chain Management Performance?

### **1.4 Problem Statement**

Markets demands are increase; customer demands are increases therefore production needs to be more productivity and to fulfill customer needs. Managers of manufacturing and retail organizations face the issues to improve supply chain management on the organization.

- (i) Implementation of ERP system in organization.
- (ii) What is benefit of ERP system?
- (iii) How does benefit of ERP system help improve supply chain management on organization?

## **Objective of the Study**

This research is significantly bringing a few objectives to achieve a goal of the study such as:

- (i) To identify benefit of ERP system.
- (ii) To identify organization supply chain performance.
- (iii) To analyze relationship between ERP system improves supply chain performance.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The primary purpose of this case study is to understand advantage of implement Enterprise Resource System (ERP) to supply chain performance. Results are achieving benefit of ERP system implement towards supply chain performance. For the research methodology are through theoretical framework, hypothesis development, and research design and data collection through questionnaire.

The remainder of the research paper is laid out as follows: the first section is review about advantage of implement Enterprise Resource Planning system (ERP). On the chapter two describe the benefit of implement Enterprise resource planning (ERP) towards supply chain performance. On top of that will be describing organization supply chain performance and benefit of implement ERP system towards supply chain performance. On chapter 3 research methodology will be the theoretical framework, Hypothesis development, exploratory study, and the data collection method more concentrate in questionnaire and interviewing.

## 2.2 Enterprise Resource System (ERP) System

Over the years organizations have been striving to realize benefits of ERP and information technology (IT) investments. Ideally, all business transactions, such as inventory management, customer order management, production planning and distribution are entered, recorded, processed, monitored and reported (Helo et al., 2008). A single comprehensive database collects data and feeds data into the various modules (Krajewski et al., 2007).

According to Botta-Genoulaz and Millet (2006) summarized the motivations for adopting an ERP system from an operational aspect as follows: poor or uncompetitive business performance, cost structure too high, not responsive enough to customers or suppliers, complex, ineffective business processes, inability to support new business strategies, business becoming too global, and inconsistent business processes. This concept are not agree by others researchers.

The modules in an ERP system can be master production schedules, material requirements planning, inventory statuses and financial control (Helo and Szekely, 2005). ERP system capabilities have developed fast during the late years (Akkermans et al., 2003), although many small and medium enterprises still use technically obsolete applications developed in the 1980s, such as MRP systems (APICS, 2007). Swedish companies tend to change ERP systems each 12 years (Computer Sweden,



2007).Advanced ERP versions and modules have shifted the focus from internal optimization to external relationships.

There is now functionality for global on-demand access to operational data, enabling external collaboration, data sharing and additional transaction ability through expansions into functionality such as customer relationship management, supplier relationship management, built-in-portals and collaborative tools for joint planning. What is included in an ERP system is continuously changing as ERP vendors buy best-of-breed vendors to add functionality (Apics, 2007).

ERP has a number of limitations. The success of the system is fully dependent on how the employee utilizes it. This means they must be properly trained, and a number of companies have attempted to save money by reducing the cost of training. Even if a company has enough money to implement ERP, they may not be able to successfully use it if they do not have enough money to train their workers on the process of using it. One of the biggest problems with ERP is that it is hard to customize. Very few companies can effectively use ERP right out of the box. It must be modified to suit their needs, and this process can be both expensive and tedious. Even when a company does begin changing the system, they are limited in what they can do.

### **2.3 Benefit of ERP (Enterprise Resource Planning) System**

Most of researcher have find out that implementation ERP system in organization bring more advantage to organization compare to disadvantage. When ERP systems are fully realized in a business organization, they can be expected to yield many benefits, such as reduction of cycle time, faster transactions, better financial management, the laying of the groundwork for e-commerce, linking the entire organization together seamlessly, providing instantaneous information, and making tacit knowledge explicit (Mabert et al., 2001; Davenport and Brooks, 2004; Shang and Seddon, 2000; Murphy and Simon, 2002; Al-Mashari et al., 2003).

ERP can provide the digital nervous system and the backbone in an organization to respond swiftly to customers and suppliers (Cox et al., 2000; Mabert et al., 2001). As reported in Akkermans et al. (2003), ERP systems are widely believed to contribute to SCM in technical areas such as standardization, transparency and globalization. ERP systems are a leading tool for this purpose, and are always expected to be an integral component of SCM (Nah et al., 2001; Themistocleous).

Shang and Seddon (2000) classified the different types of ERP benefits into five groups as follows: IT infrastructure, operational, managerial, strategic and organizational benefits. Order cycle times (the time from when an order is placed until the product or service is delivered) can be reduced, resulting in improved throughput, customer response

times, and delivery speeds (Cotteleer and Bendoly, 2006; McAfee, 2002). Similarly, automated financial transactions can reduce cash-to-cash cycle times and the time needed to reconcile financial data at the end of the quarter or year (Mabert et al., 2000, 2003; McAfee; Stratm 2001). The result is a reduction in operating capital and the headcount of the financial area. Those studies have addressed the classification and content of ERP benefits.

### **2.3.1 Provide More High Quality Information**

Large volumes of transaction based planning and operational data generated and stored by ERP system could be useful for planning and demand management. ERP systems, while providing good transactional engine for operational control, tend to increase the volume of information available to managers Carton F. and Adam F.(2005). Thus, too much information in overwhelming detail, may contribute to information overload. This information, however, is about the internal processes and internal supply chain. Information sharing and transfer from the other partners, external supply chain information and the product demand and planning information may actually may further intensify the information overload

### 2.3.2 Decision Support

ERP systems, because of their transaction-centric nature, have traditionally inadequate or limited capability to support decision-making in organizations. Even though increased transaction processing efficiencies, higher quality information and greater accessibility of information, and greater support for ad hoc reporting were identified as some of the benefits of implementing ERP, very little impact on the business analysis and decision support areas was noticed in the past research (Granlund, M. and Malmi, T.(2002). Recognizing and acknowledging this weakness, several major ERP software vendors have started offering extension products such as Advanced Planning and Scheduling (APS), Supply Chain Management (SCM), Customer Relationship Management (CRM), Product Life cycle Management (PLM), Business intelligence Warehousing (BW) etc that offer decision support capability.

Organizations are increasingly 'bolting-on' such extensions on top of existing ERP system and deriving the powerful decision support capability (Stanek, S., Sroka, H., & Twardowski, Z.(2004). For example, SAP, even in their recent 'my SAP ERP' all-in one solution, has incorporated new reporting functionality in the form of 'Business Analytics' to their new customers in the midmarket. These developments explicitly signal that ERP systems by themselves have limited capacities to meet such needs, and software vendors are offering additional tools and solutions to support decision-making capability.

### **2.3.3 Reduce Cost of Operating**

ERP software attempts to integrate business processes across departments onto a single enterprise-wide information system. The major benefits of ERP are improved coordination across functional departments and increased efficiencies of doing business. The immediate benefit from implementing ERP systems we can expect is reduced operating costs, such as lower inventory control cost, lower production costs, lower marketing costs and lower help desk support costs.

### **2.3.4 Reduce Lead Time Ordering, Satisfy Customer Needs Faster Transaction**

Through ERP system lead time to order the material have been reduce lead time of ordering. Since through this system all the ordering of material will be key in the system and the planner direct buy the raw material with the short lead time. After the raw material have been arrive the production can be run to fulfill customer needs.

## **2.4 Implementation of (ERP) Enterprise Resource Planning system**

Implementing an enterprise resource planning (ERP) system successfully is extremely important to future competitive strategy of a company. Management must be aware of the ERP system's strategic role as the backbone in providing the dynamic

business systems imperative to new systems implementations. ERP is a process of innovation that enhances data processing, distribution, and service standards via the employment of new methods, hardware, software, and human resources.

An ERP system, implemented across an organization, affects almost all the business processes of that organization. As the ERP system spans across functional boundaries, it is closely connected to organizational processes. From a technology perspective, it is integrated the existing corporate computer software and hardware, thus incurring substantial software and hardware expenses during.

ERP implementation costs can be substantial. Florida's Palm Beach County Council paid US\$ 25 million to install a PeopleSoft ERP platform, according to Computerworld (Careless, 2007). An IT benchmark study notes a 35% increase in average IT cost to support end users, a 40% increase to support human resources, and a 7% increase in HR administration costs (Holland & Skarke, 2001).

In a case study of the UK subsidiary of a major U.S. manufacturing company with turnover of £50 million, more than £3million was spent on initial implementation, and there was an ongoing support and maintenance cost of £1.8 million (Baker, 2003). Consequently, a detailed analysis of ERP implementation costs and strategic objectives of organization should be carefully considered before undertaking such a project (Babey,

2006). Literature indicates that factors affecting the implementation of ERP systems in large organizations do not necessarily apply to business (Francolanci, 2001; Raymond, Rivard, & Danie, 2004; Tarn, Yen, & Beaumont, 2002) due to its unique characteristics, which are briefly presented in the next section.

Jacobs and Why bark (2000) expressed their concerns with ERP implementation. Using the furniture industry as a reference, they illustrated how ERP implementation could lead to disaster unless there were consideration for production processes and customer demand. They suggested that two factors, centralization of information and flexibility of production systems, should be simultaneously considered as firms configure their ERP systems at multiple facilities.

For example, firms that have the need for highly centralized control and low flexibility could develop one single set of “best practices” to fit all facilities. In contrast, firms with no need for centralized control but a desire for highly flexible systems to meet frequent customer changes may opt for multiple ERP systems with multiple “best of breed” processes in individual facilities.

The ERP implementation process is divided into five major phases. The first stage is project preparation, second stage is business blue print, third stage is realization, fourth stage is final preparation and the last stage is go live and support.