Extended Enterprise Resource Planning (ERP II): Evolution and Framework of Primary Components

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Abstract: Information technology is the most important competition strategy of a lot of businesses. IT strategy has provided the possibility of information technology integration in enterprise and value chain (customers and suppliers) to make businesses more beneficial and link all business units together. Therefore, more businesses have applied a system of Extended Enterprise Resource Planning (ERP II) as an IT strategy to profit from an integrated system. This study thoroughly chronicles many developments and events during the formative years of ERP II through proposing a conceptual framework, highlighting Enterprise Resource Planning (ERP) as a subclass of ERP II, linking back-office functions, and considering Supply Chain Management (SCM), Customer Relationship Management (CRM) and E-business as the other primary components of ERP II, supporting Front-office functions.

Key words: IT Strategy, Enterprise Resource Planning, Erpii Framework, Primary Components

INTRODUCTION

Information technology is the most important competition strategy of a lot of businesses. Indeed, IT is the main strategy of a numerous companies. Just a glance at some companies such as Wall-Mart, FedEx, Cisco and Dell could clarify how IT has been the base of their business strategy. IT strategy has provided the possibility of information technology integration in enterprise and value chain (customers and suppliers) to make businesses more beneficial and link all business units together. Information integration in an enterprise has made accessibility to the required information in a real-time manner for users to make decisions well. Therefore, more businesses have applied a system of Extended Enterprise Resource Planning (ERP II) to profit from an integrated system in an enterprise (Beheshti, 2006; Weston, 2003).

The new framework appeared after 1980's for companies' activities, is described by market globalization, technological expanding, more competitors and increasing customers' demand. This framework forced companies to change management systems for keeping themselves in competitive environment. At this time, concepts and methodologies tend to decrease costs and improve the quality of operating activities (Chalmeta, 2006). It was time that companies widely tended to use ERP, since the goal of ERP is improving the internal efficiency by integration of different sections of an enterprise. Charles Moller (Moller, 2005) defined ERP (Enterprise Resource Planning) as "a standardized software packaged designed to integrate the internal value chain of an enterprise. An ERP system is based on an integrated database and consists of several modules aimed at specific business functions". Skok and Legge (2002) have summarized the main factors leading to expansion of the ERP systems as follow:

- Legacy systems and Y2K system concerns;
- Globalization of business;
- Increasing national and international regulatory environment e.g. the European Monetary Union;
- BPR and current focus on process standardization e.g. ISO9000;
- Scalable and flexible emerging client/server infrastructure; and
- Trend towards collaboration among software suppliers

Regardless of all factors importance, problem Y2K was the main motivation of enterprises for tendency to ERP, but the ERP market weakened after 2000. The main reason of this failure in market was that most of the companies had increased their qualities and business efficiencies via ERP performance and therefore this improvement wasn’t a competitive superiority anymore, hence the ability of quick response to market demand with creative and innovative products and management of the relationship between costumers and enterprise determined the difference between competitors (Chalmeta, 2006; Wilcox et al., 2003).
At this time, the suppliers of Customer Relationship Management (CRM) and Supply Chain Management (SCM) appeared due to more attention to cooperation in supply chain and customer-oriented strategies. Consequently, various changes were made in structure and enterprise role in a way that the whole supply chain is considered as enterprise (Koh et al., 2008; Moller, 2005). Hence, more relations and links are required among business units. This process made a requirement of data in anywhere, at any time in enterprise and in supply chain, with confidence that data are update, accurate, independent of time, place and monetary unit. Thus the need for existence of a standard data format was felt. A standard data format which provides possibility of real-time inter and intra-company relations whereby, problems, mistakes and delays concerning data, language and monetary unit converting are omitted. These changes made a great tendency to the next generation of ES (Enterprise Systems) (Weston, 2003).

Fig. 1: ERPII functions and primary components

Fig. 2: ERPII evolutionary framework of primary components
In future, ERP will move towards improving supply chain linkages and cooperation among different enterprises. As figure 1 demonstrates, ERP core which is a complete and integrated set for linking back-office functions, is converting to a subclass of an integrated enterprise-wide system i.e. ERPII, while the other parts of this system such as SCM, CRM and E-business focus mainly on front-office functions (Tarn et al., 2002).

ERPII which is coined by Gartner Group in 2002 is the last step in the evolution of ES. ERPII plays several important roles (Koh et al., 2008) such as:

- extending business processes;
- opening application architectures;
- providing vertical-specific functionality; and
- supporting global enterprise-processing requirements

Gartner Group which established ERP for the first time, introduced ERPII (Moller, 2005) as: “a business strategy and a set of industry-domain-specific applications that build customer and shareholder value by enabling and optimizing enterprise and inter-enterprise, collaboration-operational and financial processes”.

In this study it is endeavored to elaborate on the concept of ERPII. Since the evolution of this company-wide system is capable of demonstrating its appearance reasons, growth and how to form, at first a framework is represented to explain the evolution process of ERPII (figure 2). In order to build this framework the evolution and concept of each primary component of ERPII is studied comprehensively. Then this framework is used widely to depict ERPII.

Each of the four following sections describes one of the primary components of the framework. Accordingly section two describes ERP concept and its forming process, section three encompasses SCM concept and its evolution, E-business is explained widely in section four, section five belongs to CRM and finally, section six and seven concern conclusion and the future of ERPII respectively.

2 ERP: Concept and Background:

In order to clarify the concept of ERP, provision of a brief history and description of the relationships between ERP and its predecessors seems necessary. The events occurring to shape the evolution of ERP are naturally divided into some successive decades. Taking advantage of this division this section goes to the details of the events happening to develop the ERP systems.

2.1 Prior to 1960s:

One of the most effective people who made great attempts to grow and expand the material planning and control systems at century 20 was Fred W. Harris (1913). Harris introduced basic Economic Order Quantity (EOQ) model by applying mathematics for setting manufacturing lot sizes. Afterwards a multitude of variants of EOQ model was the focal point for numerous researches in the next decades. Due to lack of certainty and continuance in demand, Wilson (1934) believed that principles of Harris’s model is in contradiction with real world. With regard to this volatile environment, an analysis indicated that separating the inventory control problems into two distinct areas would be so useful; the first area focuses on specifying the amount of inventory to produce or purchase, while the second one focuses on determining the reorder point or level of inventory that would signal for a replenishment order to purchase or produce material. This work made the foundation of independent demand management, leading to the progress of a wide variety of Reorder Point (ROP) systems such as base stock, continuous review, periodic review etc. much of this work was done by means of pencil and paper, a slide rule or a simple tabulating machine accessible during the 1930s and 1940s. After 1940, IBM, NCR and Burroughs produced administrative machines capable of sorting, consolidating and summarizing coded data on punch cards. Using punch cards and these machines lasted till 1950s. In 1945 IBM650 Magnetic Drum was introduced. It provided accessibility to documents and information non-sequentially. Then, in 1956 IBM RAMAC 305 (random access memory accounting machine) disk-based system appeared decreasing attempts to sort and thereby omitting thousands of cards engrossing bulky files. In the last of 1950s, Common Business Oriented Language was invented. COBOL used a simple grammar structure similar to English phrases for planning (Mabert, 2007).

2.2 1960s:

At 1960s production systems focused on inventory control. Due to the fact that at this decade concentrating on efforts for cost reduction could give them an edge over their competitors, companies endeavored to take advantage of product-focused manufacturing strategies based on high volume production, cost minimization and assumption of stable economic circumstances. In this era companies could finance keeping lots of "just-in-case" inventory on hand to meet customer demand and still stay competitive. Majority of customized software packages were designed based on traditional inventory concepts in order to manage inventory; eventually the computerized reorder point (ROP) systems were introduced, fitting basic Manufacturing Planning and Control
Mabert appropriately, MRP systems fitted the requirements fully in the 1960s (Gupta et al., 2006; Jacobs et al., 2007; Mabert et al., 2001; Shehab et al., 2004; Umble et al., 2003). At this time earlier variants of computerized MPC systems such as IBM's "PICS"- Production and Inventory Control System- utilized magnetic tapes, the sole accessible large-scale storage medium. In addition, economic order quantities were calculated by hand using slide rules and then put into the system (Jacobs et al., 2007). After the early 1960s, time-phased replenishment planning could be performed efficiently exploiting the computer on the whole bill of material for plenty of items in the product catalogue, due to the widespread advancement of computing memory, processing speed and programming languages. Not only at the end items, time-phased requirements planning made processing possible even for a comprehensive nested bill of material (Mabert, 2007). Finally through a collaborative effort between J.I.Case, a manufacturer of tractors and other construction machinery and IBM, MRP the ancestor of MRPII and ERP came into existence. At this period of time, this MRP application software was the best solution for planning and scheduling materials for complicated products. Working at J.I.Case, Dr. Joe Orlicky had a significant impact on the development of time-phased replenishment planning and MRP; hence he has been famous as the father of MRP (Jacobs et al., 2007). In essence, MRP is a time-phased order release system which schedules and launches manufacturing work and purchase orders in order to provide sub-assemblies delivered at the assembly station in a timely fashion. In fact MRP systems play a prominent role in converting the master production schedule supported by bill of material files and completed for the end items into time-phased net requirements for sub-assemblies, components, raw materials planning and procurements. To set production schedules for a plant, MRP systems use product demand, inventory balances and replenishment lead times as inputs. Integrating forecasting, master scheduling, procurement and shop floor control with each other appropriately, MRP systems fitted the requirements fully in the 1960s (Gupta et al., 2006; Jacobs et al., 2007; Mabert et al., 2001; Shehab et al., 2004; Umble et al., 2003).

2.3 1970s:
Since there was a need for controlling the plans generated by MRP to verify them as valid ones by the available capacity, production and material planning wasn't the whole problem anymore. Consequently the basic MRP system capabilities were promoted by adding techniques for capacity planning to these systems. Different components of capacity planning were supported by developing a wide variety of tools; for instance sales and operations planning for the planning of aggregate sales and production levels, master production scheduling for the development of the specific build schedule, demand management for forecasting, sales planning and customer order promising and rough-cut capacity planning for high level resource analysis. From then on these systems were considered as company-wide systems and closed loop MRP emerged as the next stage in the evolution of extended ERP. Closed loop MRP systems, indeed, evolved through the combination of the output of MRP and routing information to specify the required capacity (Gupta et al., 2006; Umble et al., 2003). In this decade Communications Oriented Production Information and Control System, intended to be run on the IBM model 360 mainframe computer, was introduced by IBM; it was aimed to provide "... a series of concepts that outline an approach to an integrated computer-based manufacturing control system" (COPICS, 1972) (Jacobs et al., 2007). Earliest MRP systems sounded outdated, due to the ongoing developments in hardware and software. These improvements in hardware and software, and also their availability at a fair price provided the possibility of expanding plenty of functions along with the offering of integration (Jacobs et al., 2007). Manufacturing Management and Account System (MMAS), regarded as an actual predecessor of ERP by Bill Robinson from IBM, was offered by IBM in 1975. It was able to create manufacturing orders from customer orders, making advantage of either a standard bill of material or a bill of material enclosed with the customer order. It also produced general ledger postings and job costing as well as forecasting updates sourced from inventory and production transactions. In parallel with this offer, Orlicky (Jacobs et al., 2007) released his text in this year, the first thoroughly elaborate description of MRP which its audience went beyond the technical manuals. In addition the emergence of major software companies, becoming main ERP suppliers such as SAP, Lawson Software, J.D.Edwards, Oracle and Baan occurred in the mid-1970s. To synchronize new software applications with the offering of new hardware systems, IBM system 34 - a mini-computer- was released. Manufacturing, Accounting and Production Information and Control System (MAPICS), a new integrated set of applications was released as well. MAPICS took MMAS to a higher level with general ledger, accounts payable, order entry and invoicing, accounts receivable, sales analysis, payroll, data collection systems support, product and production definitions, inventory management, material requirements planning (with a limited master scheduling capability), production monitoring and control capabilities. Forecasting, capacity requirements planning, purchasing, and full-scale master production schedule modules were added to this set by IBM, in the later release. The next stage in the evolution of extended ERP, i.e. MRPII –manufacturing resource planning- got underway (Jacobs et al., 2007).

2.4 1980s:
In late 70s and in 80s unavoidable global competition, necessary novelty of product to retain customer and swifter production and distribution made businesses need for enterprise-wide integrated systems. Furthermore
the urgent need for the presence of the relationships management among functional areas was felt, owing to the establishment of systems thinking based on management philosophies like TQM (Total Quality Management) and JIT (Just In Time) (Gupta et al., 2006). Consequently, MRP completed to encompass some other applications such as order processing, product costing and marketing. Developing to a company-wide system capable of planning almost the whole enterprise’s resources, MRP commenced to stand for the phrase manufacturing resource planning instead of material requirements planning; finally the term manufacturing resource planning II (MRPII) was coined to distinguish between the system with newer capabilities and its predecessor. MRPII was a system aiming to integrate key functions namely production, marketing and finance along with other functions like personnel, engineering and purchasing into planning process in order to make the manufacturing enterprise more efficient. In addition MRPII even had the ability to demonstrate the items that were not in balance with a desired operation plan. Essentially MRPII was a system starting with aggregate planning and demand management and ending with a thorough schedule including both sub-assemblies to be produced in-house and those to be manufactured from outside; in other words MRPII can be regarded as an extension of MRP to the shop floor and distribution management. Since the MRPII applications became available on mini and micro computers, the number of MRPII installations raised in the 1980s (Gupta et al., 2006; Jacobs et al., 2007; Mabert et al., 2001; Shehab et al., 2004; Umble et al., 2003).

At the end of the 1980s IBM released a new software named Computer Integrated Manufacturing (CIM); CIM was in fact an update to the COPICS software which its framework offered a “… comprehensive strategy to help integrate information in a consistent, effective manner across the enterprise”.

### 2.5 1990s:

Despite the fact that MRPII was an important enhancement over its ancestors, the circumstances in the business world forced businesses to have more integrated systems, global distribution channels, numerous international plant sites etc. These new conditions caused the demand for more advanced systems capable of providing accessibility to information. These systems make companies to be able to have clearer view to their operation information to use their resources more efficiently (Mabert et al., 2001). In parallel with this situation, ongoing advancements in technology let MRPII expand incorporating all resource planning for the whole enterprise. Now other areas like product design, information warehousing, communication systems, human resources and project management can be incorporated in the plan (Umble et al., 2003). Eventually, in the early 1990s Gartner Group coined the term "enterprise resource planning" in order to characterize the systems that were an extension of MRPII systems. These ERP systems differed from their predecessors in the realms of relational database management, graphical user interface, fourth generation languages, client-server architecture and open system capabilities; nevertheless the prime difference between MRPII and ERP was that ERP endeavored to plan and schedule supplier resources as well as planning of internal resources with regard to the changeable customer demands; while MRPII only concentrated on the scheduling of internal resources. However enabling its users to synchronize the information flow with the physical flow of goods, ERP gave a special privilege which was not served by the earlier systems (Beheshti, 2006; Gupta et al., 2006; Shehab et al., 2004). ERP experienced its maturity stage in the mid-1990s. In this era ERP expanded to incorporate other "back office" functions like order management, warehousing, distribution production, quality control and asset management (Shehab et al., 2004).

Strong linkages between ERP and SCM are needed to achieve the mentioned ERPII systems’ goals. Therefore following section concerns the next primary component of ERPII i.e. SCM.

### 3 SCM: Concept and Background:

In the recent years, SCM has become an important issue, because managers realized the importance of logistic as the last cost-cutting frontier. There are even some courses at universities concerning SCM. Nevertheless, SCM isn’t a new scientific subject, in fact is as old as commerce. The goal of supply chain management is conveying the appropriate resources and products to the best places at the best time and price and conditions (Siems, 2005; Tarn et al., 2002). Supply Chain Management can make a cycle started by consumer and finished by consumer. Here, supply chain represents the whole production process of each product which gets started with suppliers, inputs and production process and follows to after production and distribution in a way that can be called a network; therefore, SCM is a network of equipment and distribution choices that supports vendors, suppliers, producers, distributors, retailers and commercial parties. From the first of 1980s, enterprises found that they cannot compete effectively while they are in separation with the other members of supply chain. On the other hand, they found that their success depends not only on the efficiency and productivity within their enterprise but also among their parties (Tarn et al., 2002). There isn’t any determined definition for SCM, but some specifications are common in all definitions such as an end-to-end coordination and focusing on the integration with the other parts of chain for delivering value to final consumer. For instance, Ellarm and Cooper (1990) defined SCM as: "an integrating philosophy to manage the total flow of a distribution channel from supplier to ultimate customer"; or Christopher’s definition (1998) is: "The
management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole". However, it must noted that SCM doesn’t only implicate new business practice; it is rather presenting a strategic change in principles and basics of management of a company and extending to external parties to get supply chain to a common goal of optimization and efficiency (Meehan et al., 2008). SCM systems have two important systematic functions that serve flexibility and required speed for confronting demand uncertainty. The first is provision of the information on a timely manner for sharing in whole supply chain, and the second is simplification of synchronization of whole supply chain (Tarn et al., 2002). Enterprise can derive benefits such as increased revenue, increased productivity, operational cost savings, lower inventory, reduced order to fulfillment cycle time from SCM implementation, but the main advantage of SCM is better business and operational planning (Hendricks et al., 2007). According to Siems (2005), the evolution of SCM can be divided into four primary periods:

3.1 The industrial revolution era (1776–1912):
At this period, a lot of businesses emerged. Efficient use of electricity, railway, and transportation and communication systems caused to bring people from farms to companies. Transportation and communications networks became even more enhanced as well as integrated markets across and between continents; accordingly this era witnessed intensification of globalization forces.

3.2 The mass production era (1913–1973):
This period was started with startup of the first moving assembly line by Henry Ford. At this period, businesses had focused on defining and optimizing the specialty activities by means of scientific methods of management, operation research techniques and moving assembly lines.

After 1970s, American producers were efficient, but they were challenged by Japanese producers producing more qualified and cheaper products. Therefore, American producers focused on quality increase and errors omitting in supply chain. Generally, businesses focused on optimizing the internal processed via taking advantages of methods of production control and the ideas of lean production such as JIT (Just In Time), TQM (Total Quality Management) and ERP systems.

3.4 The information engineering era (1996 to now):
At this period, businesses have utilized internet, E-commerce and communication and information technology in supply chain effectively. with better information related to demand requirements, logistic channels, in-transit and supplier inventory levels producers can produce customized goods in a mass production system. Sharing the essential information with main parties was the distinguishing point of this period with the last ones.

The manifestation of the business environment characteristics in the information engineering era desired E-business emergence. The following section describes E-business, a recent concept which made accessibility of information in a real time manner through the whole value chain.

4 E-Business: Concept And Background:
In the recent years, E-business solutions are developing widely and every day the manufacturers interested in E-business are increasing (Beheshti et al., 2006; Olhager et al., 2003; Pavic et al., 2007). There isn’t any determined definition for E-business in the world too, but some common points exist in all definitions. Beheshti et al. (2006) defined E-business as: "a way for companies to conduct business transactions electrically and to become more efficient and to promote operational flexibility, in addition responsiveness to consumer needs and supplier relations can be improved"; And Croom (2005) has defined E-business as: "The use of systems and open communication channels for information exchange, commercial transactions and knowledge sharing between organizations". However in this study, emphasis is on IBM definition of E-business. Accordingly E-business is: "A secure, flexible and integrated approach to deliver differentiated business value by combining the systems and processes that run core business operations with the simplicity and accessibility made possible by Internet technology" (Koh et al., 2006).

Due to lack of a unique definition, E-business and E-commerce sometimes are used interchangeably. Therefore, although this study focuses on E-business, an explanation concerning E-commerce and its differentiation form E-business is provided. E-commerce is just a portion of E-business, but attracted a lot of interest; it is usually defined as purchase and sale via internet especially www, focusing mainly on enterprise’s customers. E-commerce includes Business to business (B2B), business to consumer (B2C), electronic data interchange, and online catalogues, while E-business extends relationships to include suppliers, staffs and business parties to conduct all business by means of internet. This extension in relationships has made E-business more significant than E-commerce, since E-business affects all processes in the value chain (Olhager et
al., 2003; Pavic et al., 2007). For better understanding of E-business and its difference with E-commerce, a
glance at the history of E-business can be helpful. The evolution of E-business can be divided to two parts: the
first part is appearance and development of E-commerce and the second, adding the other E-business models
and its completion. As chu et al. (2007) proposed, the first part can be divided into three phases and consequently consider four principal phases for E-business evolution.

4.1 The first period or pre-web era (before 1990):
Before growth of www, business activities were closed. For doing businesses digitally, communication
channels must be subjected to negotiate. Despite the linkages among business parties provided by internet, open
communications couldn’t become practical due to lack of a common message format. Electronic Data
Interchange (EDI) was a standard for supplying a syntax in network environment, but wasn’t flexible enough to
embrace interface features. Technology developed soon and could use internet well.

4.2 The second period or reactive Web era (the first of 1990s);
At the first of 1990s, business activities were done in an open environment and was simply available.
Internet let to share information. And www formation caused to E-commerce startup. Open accessibility was
possible. URLs appearance which were identification determinant and available browsers simplified information
sharing and observing. It wasn’t necessary to plan the relation in advance anymore. Websites increased and this
was simultaneous with growth of powerful explorer motors. Accordingly at this time, www became a great
resource of potential customers and websites were information resources. Generalized portals were also
promoted to perform operations such as cataloging, listing, posting and grouping. Although communications
were open, demand for information was one-way. Only businesses can respond to demands. E-commerce
activities had a lot of problems due to insecurity in confidential data transferring.

4.3 The third period or interactive web era (in the middle of 1990s):
E-commerce converted from unilateral browsing to a bilateral commercial process. At this time,
interactivity became possible due to appearance of a main technology called cookies. More activities in relation
with E-commerce were done, online shopping was possible as well as personalization and customization. Online
shopping appeared with different structure and therefore online brokering emerged too. Finally, websites were
able to link suppliers and customers via extension of online links. Cryptography systems were used for
extension of Secure Socket Layer (SSL) on the web to keep the security of confidential information and
integration of trading parties. The main technologies followed their growth to manage heavy traffic of webs and
make appropriate and complete relations among databases such as Open Database Connectivity (ODBC) and
improve connector language with databases.

4.4 The fourth period or integrative web era (the first of century 21):
At this period, websites tried to integrate processes online. The main use of websites weren’t online
commercial activities and it was for managing E-business processes. This era witnessed the emergence of E-
busines processes such as e-engineering, e-collaboration, e-supply chain management and e-procurement (Chu
et al., 2007).
Various models of E-business were introduced and used by enterprises. Generally these models can be
categorized into five groups (Beheshti et al., 2006):

1. business to business (B2B)
2. business to consumer (B2C)
3. portals
4. websites as goodwill or promotional vehicles
5. peer to peer (P2P) or consumer to consumer (C2C)

Due to flexibility and span of internet, in preceding years E-business have extended rapidly and it is likely
to follow. However, here E-business is regarded as automation of transactions, communications, actions and
reactions by means of computers and information technology in order to achieve commercial goals. nevertheless
it should be noted that nowadays companies do not justify E-business implementation risks in accordance with
ROI but justify in accordance to strategic goals such as sustaining customers' satisfaction, maintaining a
competitive edge and establishing and expanding brand awareness (Albrecht et al., 2003; Damanpour, 2001;
Jarvenpaa et al., 1999).

The mission of an ERPII system will be accomplished by paying more attention to the front office
functions. Therefore CRM should be also integrated to the other principal ERPII components. The last section
describing the other main components of ERPII pertains to CRM.
5 CRM: Concept And Background:

CRM is “a coherent and complete set of processes and technologies for managing relationships with current and potential customers and associates of the company, using the marketing, sales and service departments, regardless of the channel of communication” as Chalmeta (2006) defined.

Internet empowers customer, because he/she can observe products by some clicks and make best decision without any external force. Hence, combination of high quality and low price isn’t factor of competition, because plenty of other suppliers represent their products with the same conditions. At this status, the good relations with customer and customer satisfaction are the superiority factors (Meehan et al., 2008). A good relationship doesn’t mean numerous transactions between trading parties, but it means both side of trading understand the real meaning of the relationship. It is proved that this relationship has some advantages for both customers and suppliers. For vendors, ability to profit maximizing with risk decrease, improvement of information processes, increase in customer satisfaction and loyalty, and for customers, better accessibility, appropriate price, goods with better quality, less stress and more convenience (Madill et al., 2007). Analysis of preceding definition indicate that CRM provides possibility of having integrated view of customers via analyzing tools, managing the customers’ relationships and improving the processes related to customers regardless of communication channels such as telephone, website, personal visit and etc. According to Ozgener and Iraz (2006) Enterprise can derive benefits from CRM implementation such as Developing a closer relationship with customers, Increasing customer satisfaction, Ensuring sustainable competitive advantage, Maximizing profitability due to increased sales, Increasing customer loyalty as a result of more personal and efficient service, and Collaborating with customers for joint value-creation, to name but a few.

From 1950s to 1980s, businesses tried to have more commercial transactions by increasing demand. Hence, they used different marketing techniques such as mass marketing, direct sale, target marketing and etc to capture customers entering market. After 1990, business conditions changed in a way that the value added by transaction marketing to goods and services wasn’t sufficient anymore. At this time, relationship marketing strengthened and gave more value to goods and services than relationship marketing (Ahn et al., 2003; Lindgreen et al., 2006). Finally, CRM passed the last stage of completion by including some other functions such as sales and service & support. CRM is a key competitive strategy for businesses including three primary components i.e. marketing, sales and service & support that aims to build and maintain a profit-maximizing portfolio of customer relationships (Lindgreen et al., 2006).

Conclusion:
In order to depict Extended Enterprise Resource Planning, firstly a framework for ERP II evolution is represented. Then, each component is described separately in a section including some conceptual explanations, reasons of appearance and how that component grew. Since ERP II is a new issue and lastly paid attention to by ERP vendors it should be noted that its effects cannot be evaluated thoroughly due to lack of observations. The important point is that companies must have a competitive advantage to survive. Nowadays companies are subjected to challenge by business world in terms of globalization, fierce competition, products with more complexity, shorter products life cycle, customer-oriented market etc. at this time, one of the best ways for taking advantage of technology to achieve a competitive edge is ERP II implementation, since ERP II can streamline main work processes by linking all business processes together. This system can also give a holistic perspective of complicated internal business activities and is capable of globalizing companies, decreasing cost, increasing quality and managing customers and vendors.

Future of Erpii:
However, in future ERP II will encompass an IT strategy whereby customers, vendors and companies are linked together electronically. At this global business environment key concepts like E-business, CRM, SCM and ERP will be applied in parallel to provide necessary competitive superiority for companies via increasing efficiency and effectiveness of the whole supply chain.

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