

## Chapter 2.5

# Evolution of Enterprise Resource Planning

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### ABSTRACT

Business needs have driven the design, development, and use of the enterprise-wide information systems we call Enterprise Resource Planning (ERP) systems. Intra enterprise integration was a driving force in the design, development, and use of early ERP systems. Changing business needs have brought about the current business environment, wherein supply chain integration is desirable, if not essential, thus current and evolving ERP systems demonstrate an expanded scope of integration that encompasses limited inter-enterprise integration. This chapter explores the evolution, the current status, and future of ERP, with the objective of promoting relevant future research in this important area. If researchers hope to play a significant role in the design, development, and use of suitable ERP

systems to meet evolving business needs, then their research should focus at least in part on the changing business environment, its impact on business needs, and the requirements for enterprise systems that meet those needs.

### INTRODUCTION

Twenty years ago supplier relationship management was unique to the Japanese (those firms who embraced the JIT philosophy), China was still a slumbering economic giant, the Internet was largely for academics and scientists and certainly not a consideration in business strategy, the very idea of a network of businesses working together as a virtual enterprise was almost like science fiction, and hardly anyone had a cell phone. The world has changed. The cold war is over and economic war is on. We have moved rapidly toward an intensely competi-

DOI: 10.4018/978-1-60566-146-9.ch002

tive, global economic environment. Countries like China and India are fast positioning themselves as key players and threatening the economic order that has existed for decades. Information Technology (IT) is more sophisticated than ever, yet we still struggle with how to best use it in business, and on a personal level as well. E-commerce (B2B, B2C, C2C, G2C, B2G) has become commonplace and M-commerce is not far behind, especially in Europe and Japan. In 2007, for the first time, there are more cell phones than tethered phones in the US, and increasingly sophisticated cell phones have capabilities that exceed the capabilities of older PCs. This is the backdrop against which we will discuss the evolving enterprise information system. At this point we will call it ERP, but it should become evident in the course of reading this manuscript that ERP is a label that may no longer be appropriate for evolving enterprise and inter-enterprise systems.

In this paper we define ERP and discuss the evolution of ERP, the current state of ERP and the future of ERP. We will emphasize how the evolution of ERP has been influenced by changing business needs and by evolving technology. We present a simple framework to explain that evolution. Some general directions for future research are indicated by our look at the past, present and particularly the future of ERP.

## **ERP DEFINED**

The ERP system is an information system that integrates business processes with the aim of creating value and reducing costs by making the right information available to the right people at the right time to help them make good decisions in managing resources productively and proactively. An ERP is comprised of multi-module application software packages that serve and support multiple business functions (Sane, 2005). These large automated cross functional systems were designed to bring about improved operational

efficiency and effectiveness through integrating, streamlining and improving fundamental back-office business processes. Traditional ERP systems were called back-office systems because they involved activities and processes in which the customer and general public were not typically involved, at least not directly. Functions supported by ERP typically included accounting, manufacturing, human resource management, purchasing, inventory management, inbound and outbound logistics, marketing, finance and to some extent engineering. The objective of traditional ERP systems in general was greater efficiency, and to a lesser extent effectiveness. Contemporary ERP systems have been designed to streamline and integrate operation processes and information flows within a company to promote synergy (Nikolopoulos, Metaxiotis, Lekatis and Assimakopoulos, 2003) and greater organizational effectiveness. These newer ERP systems have moved beyond the back-office to support front-office processes and activities like those fundamental to customer relationship management. The goal of most firms implementing ERP is to replace diverse functional systems with a single integrated system that does it all faster, better, and cheaper. Unfortunately, the “business and technology integration technology in a box” has not entirely met expectations (Koch, 2005). While there are some success stories, many companies devote significant resources to their ERP effort only to find the payoff disappointing (Dalal, Kamath, Kolarik and Sivaraman, 2003; Koch, 2005). Let us examine how we have come to this point in the ERP lifecycle.

## **THE EVOLUTION OF ERP**

The origin of ERP can be traced back to Materials Requirement Planning (MRP). While the concept of MRP was understood conceptually and discussed in the 1960s, it was not practical for commercial use. It was the availability of computing power (processing capability and stor-

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