Abstract: Over the past 10 years a dominant information technology (IT) strategy has emerged: the adoption of single-vendor Enterprise Resource Planning (ERP) systems. ERP systems are highly integrated standard software packages that automate core corporate activities such as finance, human resources and logistics. They are currently the preferred method by which businesses replace legacy systems and the application market alone is worth in the region of $20 billion. This chapter investigates the evolution of ERP systems from their roots in supporting manufacturing operations to their expansion into other areas of the enterprise and beyond. An analysis of the operational and strategic implications of the widespread adoption of this class of standard software is presented which is drawn from detailed case research and the academic and business literatures. The focus of the analysis is on the strategic impact of ERP systems in organisations. The chapter concludes by examining how ERP systems may evolve further and considers the legacy implications of adopting this kind of IT strategy.

1. ERP Systems

ERP systems are highly integrated software packages that automate core corporate activities such as finance, human resources, manufacturing and supply and distribution. They evolved from the idea of manufacturing resource planning or materials requirements planning (MRP) systems towards the end of the 1980s and have become the strategic de facto standard in many companies over the past five years. The concept of MRP dates back to the 1960s when manufacturing organisations used it. Very simply, MRP involved the calculation of quantities of materials and the times they were required in order to improve operations. Throughout the 1980s and early 1990s the concept was extended to examine the engineering and financial implications of future demand on the business and was renamed Manufacturing Resource Planning or MRP II (Slack et al., 1995). ERP vendors have seen the potential to expand this thinking to the whole of the enterprise. For example, Peoplesoft expanded its Human Resource offering and Oracle its financials suite of applications. The market is dominated by 10 major players, including SAP, Peoplesoft and Oracle, who account for around 50% of the market (Manchester, 1999). The rest of the market is occupied by smaller vendors, that have either focused upon smaller companies or market niches or that have been swamped by the leaders. The consultancy associated with the implementation of ERP systems is also a large market and in 1998 this stood at around the $30 billion
mark (Baker, 1998). The sectors adopting ERP solutions are diverse. Implementations are currently in progress throughout industries such as chemicals, retail, electronics, information technology (IT), textiles and the public sector in areas such as health care and higher education. The ERP applications market has grown enormously over the past five years and at present is estimated to be around $20 billion. Although the rate of growth has slowed during 1999, mainly as a result of the need to focus on year 2000 projects, further implementations are predicted (AMR Research, 1999). However, some argue that the ERP market is now in decline and alternative IT strategies are likely to take over. In any event, ERP systems have been the preferred method by which businesses replaced legacy systems throughout the 1990s (Deloitte Touche, 1997). Although the uptake of ERP systems has slowed down, they still contribute the largest single IT infrastructure for many companies. ERP systems will therefore continue to be of vital competitive importance over the next decade and will form the basis of future legacy systems.

2. The Shift Toward ERP Systems

The major reason for the shift towards ERP/standard packages is fundamentally concerned with the need to deal with legacy systems. Many existing systems have become so difficult and costly to maintain, inflexible and misaligned with business strategy that firms have taken a clean slate approach towards their IT strategy (Davenport, 1998). There are two key reasons for the occurrence of this situation. First, markets and industries have become more international, requiring organisations to adopt business and IT strategies that are congruent with this. However, the systems and structures present within these organisations could not be modified to support this need, thereby creating misalignment (Newing, 1998). The second reason for the shift towards standard systems is concerned with the year 2000 problem (Taylor, 1998). As many organisations had developed their systems over a long period of time, the IT legacy systems have become characterised by high levels of entropy and degradation, meaning that making them year 2000 compliant would be difficult. These two issues combined sealed the fate of IT legacy systems displaying these characteristics and firms looked for alternative solutions that appeared to overcome these problems.

More specific reasons for the stampede towards standard systems are similar to those given for the implementation of MRP systems. Lockett et al. (1991) highlight that the growing competition between organisations led to the need for efficiencies and integration – MRP purported to do this. Roberts and Barrar (1992) summarise literature on further reasons for implementing MRP systems and these include the reduction in inventories, lead times and costs, market responsiveness, improved control, increased competitiveness and improved organisational communication. Many of these reasons are highlighted in the current literature on ERP systems (Holland and Light, 1999a; Kay, 1998; Martin, 1998; Appleton, 1997). In addition to the broad legacy and year 2000 problems, ERP and standard systems have been embraced as they are perceived as a step in the direction for controlling escalating IT costs, increasing development speed and reducing development staff requirements, offering greater functionality and giving firms a constantly current IT capability (Price Waterhouse, 1996).