Chapter III
Improvement in Operational Efficiency Due to ERP Systems Implementation: Truth or Myth?

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ABSTRACT

ERP systems are expected to provide many benefits, including improved business efficiency. However, they are also blamed for several business problems and failures. Past studies have analyzed investments in ERP systems based on net income, return on investment, new present value or change in market value of a firm. We argue that an analysis of more direct measures—intangible or tangible—would enhance confidence in the efficacy of ERP systems. We investigate the impact of ERP systems implementation on operational efficiency of medium sized firms in the pharmaceutical and chemicals industry. Our analysis of the data indicates that for a majority of the firms improvement of operational performance expected due to ERP systems did not materialize.

INTRODUCTION

IT Investments

Since 1990, the information era has exploded, witnessing many new information technology (IT) initiatives, including Y2K compliance; e-commerce; IT-enabled mega mergers of information-intensive companies such as AOL and Time Warner, WorldCom, and MCI; global outsourcing of IT and IT-enabled services; supply chain integration; and euro conversion. Many IT landmarks

have been achieved during this period: more than 4 billion Web pages on the Internet; creation of software to combat cyber worms, viruses, and warfare; millions of distributed databases; and widespread utilization of data warehouses and data mining for decision support systems. To support these IT initiatives and to achieve these landmarks, IT budgets of most companies during this decade increased substantially (Seewald, 2002). There is, however, a growing criticism of escalating IT investments (Mears & Dubie, 2002) and their lack of justification (Krochmel, 1999).

Enterprise Resource Planning (ERP) Systems

ERP systems are software systems to support and to automate the business processes, providing timely and accurate enterprise-wide information for decision making. ERP systems have a long history of evolution. The production scheduling, material ordering, and product shipment systems evolved from manual reorder point systems for material procurement to computerized materials requirement planning (MRP) to manufacturing resource planning (MRP-II) systems that integrated MRP and capacity requirements planning to manufacturing execution systems (MES) that further integrated MRP-II and shop floor and device control systems, and finally to ERP systems. Much of the streamlining of materials procurement process was achieved by MRP and MRP-II. By the late 1980s, tens of thousands of firms were using MRP-II systems (Rondeau & Litteral, 2001). The SAP R/3 modules and submodules consisting of sales and distribution, materials management, warehouse management, quality management, production planning for process industries, financial accounting, controlling, project system, and office communication were expected to reduce inventories, improve cash management, and cut down operating expenses. Kalling (2003) recently provided a theoretical framework in which resource-based views (RBV) are advanced to understand how ERP can provide sustainable competitive advantage. The RBV is not universally accepted as a final explanation of competitive advantage. Some believe that dynamic capabilities, not resources, are the source of competitive advantage. It is possible that ERP provides both unique resources as well as dynamic capabilities in the form of improved information and decision making to improve competitive advantage.

ERP Systems Investments

To avoid struggling with integrating myriad IT applications, many companies implemented ERP systems that required substantial investment of time, internal resources, and capital, resulting in significant organizational change (Dorien & Wolf, 2002). Often, ERP system implementation is accompanied by other improvements and enhancements in existing legacy systems. Due to many simultaneous changes that accompany ERP system implementation, it is hard to attribute any performance changes after ERP system installation solely to ERP systems. However, ERP system implementation is, by far, the most criticized aspect of IT investments. ERP systems require outlays ranging from a few million dollars to several hundred million dollars (Mabert et al., 2001). Despite high expenditures, ERP implementations have resulted in problems. Rushed software installations and inadequate training are blamed for well-publicized troubles with ERP. In 1999, soon after the rollout of its ERP system, Hershey Food Corp., in the third quarter of that year, lost $60.4 million due to problems in customer service, warehousing, order processing, and timely shipments to retailers. ERP implementation problems of Whirlpool Corporation and W. L. Gore & Associates Inc. also have received considerable attention (Collett, 1999). The bankruptcy of FoxMeyer (a drug distribution company) in 1996 is directly attributed by many to flawed implementation of ERP systems. Some skeptics equate spending on