An Exploratory Study of the Key Skills for Entry-Level ERP Employees

Alan R. Peslak, Penn State University, USA

Todd A. Boyle, St. Francis Xavier University, Canada

ABSTRACT

This research identifies the key skills (e.g., business, team, communication) that industries expect for entry level positions involving enterprise resource planning (ERP) systems. Based on a review of the literature, a number of possible core skills that ERP entry level employees should possess are identified. To identify the relative importance of these specific skills, a web-based survey involving IT professionals from 105 organizations is conducted. Analyzing the findings using exploratory factor analysis and scale reliability analysis indicates four specific and significant factors representing the major key skills that industry expects from entry level ERP positions labeled for this study such as systems analysis and integration, team skills, project management, and business and application understanding. Various common technical skills (e.g., programming, networks) were found to be significantly less important than the business and team skills. This study should assist companies in developing criteria for evaluating potential candidates for entry level positions in ERP systems, as well as universities for evaluating the relevancy of their IT and Business programs.

Keywords: *Enterprise Resource Planning, Entry Level Employees, Industries, Information Technology Skills, IT and Business Programs*

INTRODUCTION

Enterprise Resource Planning (ERP) systems are complex, computer-centric systems designed to carry out the most common business functions in an organization, including finance, accounting, human resources, and operations. Such systems enable companies to move from an isolated or stove-pipe functional view to a process view of both IS development and business activities. Although originally designed for large organizations (e.g., mySAP ERP, Oracle Applications), there currently exist a number of ERP systems designed for organizations with as few as 10 users (e.g., SYSPRO, SAP Business One). Given their applicability to organizations of varying sizes and industrial sectors, and that such systems come embedded with best business processes, it is not surprising that ERP systems have become the technology of choice for organizations attempting to reduce waste in their value chain and better integrate

DOI: 10.4018/jeis.2010040101

functional areas within their organization and members of their supply chain.

The growing popularity of ERP systems, combined with the shortage of recent IT graduates and the commoditization and subsequent outsourcing of many of the technical aspects of IT (e.g., programming, technical support), have caused organizations to question the key skills that they should expect from entry-level ERP employees. This research explores a series of key IT skills and determines what skills organizations view as important for entry-level ERP employees. With the critical ERP skills identified, employers can focus on these key areas in recruitment and development activities and improve their success rate for ERP implementation and support. Though there has been much work done on entry level skills necessary for information systems and technology graduates, little work has been none for entry-level ERP employees. In addition to examining the relative importance of these key skills, this research elicits a number of factors that can be used for summary proficiency analysis and help organizations quickly assess employee qualifications for entry level ERP positions.

ENTERPRISE RESOURCE PLANNING

There has been significant work done in the general information systems area of enterprise resource planning systems. One area of enterprise resource planning systems that has received some attention in the literature is the success or failure rate of ERP implementations. Enterprise resource planning systems are so comprehensive and as a result so complex that they require coordination across many disciplinary areas in an organization and often take multiple years to implement. They have had an uneven record of success in organizations. Estimates vary widely on the success rate of ERP implementations. Barker and Frolick (2003) suggest that 50% of ERP implementations succeed. Hong and Kim (2002) estimate a 25% success rate. Others suggest failure rates up to 90% (Scott & Vessey, 2002; Martin, 1998). Ho, Wu, and Ta (2004) have reported that currently there are relatively few successes. Overall, there is insufficient research into enterprise resource planning systems. As one author suggests, "research in the ERP area is still lacking and the gap in the ERP literature is huge" (Al-Mashari, 2003).

The essential parts of an enterprise resource planning system are integrated modules that allow business process that cross business functional areas; one large real-time database that allows for a single entry and repository for information across business functions; and seamless business transactions across business functions (Miller, 2003).

Okrent and Vokurka (2004) note six core processes that are streamlined in ERP systems: quote to cash, procure to pay, plan to perform, manufacturing operations, product life cycle, and financial management. McAdam and Galloway (2005) suggest ERP systems allow "standardising business processes, ensuring integrity of data, and removing the number, complexity, and expense surrounding old independent legacy systems."

ERP systems had their origins in materials requirements planning (MRP) that evolved to a more comprehensive system with a name coined by the Gartner Group in 1990. (Yu, 2005). ERP systems coordinate business functions and processes, are designed to lower costs "in its entire supply chain by either shortening throughput times; lowering inventory or by providing quality service" (Gupta, Priyadarshini, Massoud, & Agrawal, 2004). McAdam and Galloway (2005) suggest that ERP systems can play an "increasingly important role in sustaining 'leading edge' competitiveness.

ERP systems sales are estimated at $12 billion (Arc Advisory Group, 2003) to $30 billion (King, 2005). Market penetration is estimated at 70% of the Fortune 1000 (Bingi, Sharma, & Godla, 1999). In addition there has been a great deal of work done that has explored the gap between information systems training and the needs of practitioners. Kim, Hsu, and Stern (2006) suggest that there continues to