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International Journal of Accounting Information Systems
8 (2007) 165–190

INTERNATIONAL JOURNAL OF ACCOUNTING INFORMATION SYSTEMS

Enterprise resource planning systems and non-financial performance incentives: The joint impact on corporate performance ☆,☆☆

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Received 2 March 2007; received in revised form 3 May 2007; accepted 7 May 2007

Abstract

Some accounting information systems research suggests that the implementation of enterprise resource planning (ERP) systems improves corporate performance [Hayes DC, Hunton JE, Reck JL. Market reaction to ERPS implementation announcements. J Inf Syst 2001;15(1): 3–18; Hunton JE, Lippincott B, Reck J. Enterprise resource planning systems: Comparing firm performance of adopters and nonadopters. Int J Account Inf Syst 2003;4:165–184], while a seemingly disparate line of managerial accounting research indicates that the inclusion of non-financial performance incentives (NFPI) in executive compensation contracts also enhances performance [Said AA, HassabElnaby HR, Wier, B. An empirical investigation of the performance consequences of non-financial measures. J Manage Account Res 2003;15:193–223]. Two theoretical perspectives tie together these research streams. Cybernetic control theory explains how ERP systems offer the *means* by which managers can effectively use non-financial performance indicators, and agency theory describes how NFPI provide the *motive* and *opportunity* for managers to attend to key non-financial performance indicators. The research hypothesis tested herein asserts that the joint adoption of ERP and use of NFPI will yield greater corporate performance than either ERP or NFPI alone. In the current study, performance is reflected by return on assets (ROA) and stock returns (SR). Study results support the hypothesis, as archival data indicate that firms with both NFPI and ERP obtain significantly higher short-term and long-term ROA and SR than

☆ All authors contributed equally to this project.

☆☆ The authors gratefully acknowledge the helpful comments received from Chris Ittner, William Greene, Emad Mohd, Amal Said, Allan Webb, participants at the 2005 National Meeting of the American Accounting Association, the 2005 European Conference on Accounting Information Systems, the 2006 Management Accounting Section Midyear Meeting, and the 2007 European Accounting Association.

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1467-0895/$ - see front matter
doi:10.1016/j.accinf.2007.05.001

either ERP-only or NFPI-only firms. Research findings offer valuable insight into the theoretical and practical implications of jointly adopting the ERP and NFPI strategies.

Keywords: Enterprise resource planning systems; Information technology; Productivity paradox; Non-financial performance measures; Executive compensation contracts

1. Introduction

Enterprise resource planning (ERP) systems integrate business processes and information technologies into a synchronized suite of procedures, applications and metrics that span intra- and inter-firm boundaries. ERP systems are expected to improve firm performance primarily due to redesigned business processes, integrated managerial functions, accelerated reporting cycles and expanded information capabilities (O'Leary, 2000). Regarding the latter, ERP systems not only provide decision makers with traditional financial metrics, but are capable of capturing and delivering non-financial performance indicators (NFPI) as well (Dechow and Mouritsen, 2005). Economic theory suggests that the inclusion of NFPI in managerial compensation contracts should enhance corporate performance, relative to financial measures only, because the combined performance indicators better align managers' actions with investors′ objectives (e.g., Banker and Datar, 1989; Ittner et al., 1997). The purpose of the current study is to examine the extent to which the joint use of ERP and NFPI improves firm performance over either strategy alone.

Research findings on the performance effects of ERP systems are equivocal, yet some studies find positive outcomes; for instance, one study suggests significantly higher stock returns (SR) upon the announcement of ERP implementations (Hayes et al., 2001) and another study indicates significantly greater long-term return on assets (ROA) for ERP adopters relative to non-adopters (Hunton et al., 2003). Regarding the use of NFPI in compensation contracts, a recent empirical study indicates that the adoption, as compared to non-adoption, of NFPI improves short-term and long-term SR, and long-term ROA (Said et al., 2003). The current study complements and extends these two lines of research by examining the extent to which the joint adoption of ERP and NFPI enhances corporate performance, as reflected by ROA and SR.

According to cybernetic control theory, if an organization is to adapt and survive in its environment, decision makers need to receive feedback on key performance indicators in sufficient time to notice unexpected deviations, take appropriate action and observe system responses (e.g., Miller, 1978; Vancouver, 1996). Consistent with this theory, ERP systems provide the *means* by which organizations can capture, process and deliver a wide array of key performance indicators in (near) real-time (Bodreau and Robey, 1999; Markus and Robey, 1998), and through which managers can to coordinate and control their decisions across the enterprise (Dechow and Mouritsen, 2005). Agency theory suggests that when NFPI become part of the managerial reward system, managers have a *motive* to implement information processes, procedures, systems and metrics that are focused on non-financial performance indicators, and the *opportunity* to evoke goal-directed managerial actions. Thus, the combined benefits of adopting ERP and NFPI should boost corporate performance over firms that adopt ERP-only or NFPI-only, as the means, opportunities and motives are aligned with managers' interests and investors' objectives.

The outcome of this study is not a forgone conclusion, however, as are other potential alternative outcomes. For instance, it is possible that ERP-only implementers already make effective use of