Chapter 11
The Roles of Information Technology and Knowledge Management in Project Management Metrics

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ABSTRACT

This chapter reveals the roles of Information Technology (IT) and Knowledge Management (KM) in Project Management (PM) metrics, thus explaining the theoretical and practical concepts of IT, IT capability, Information System (IS) effectiveness, KM, and PM; the measures of IT, KM, and PM metrics; and the significance of IT and KM in PM metrics. The fulfillment of IT and KM is essential for modern organizations that seek to serve suppliers and customers, increase business performance, strengthen competitiveness, and achieve constant success in global business. Therefore, it is crucial for modern organizations to explore their IT and KM applications, establish a strategic plan to routinely inspect their functional advancements, and promptly respond to the IT and KM needs of customers. The chapter argues that applying IT and KM in PM metrics has the potential to enhance organizational performance and achieve strategic goals in the social media age.

INTRODUCTION

In a global economy, firms face the challenge of effectively investing scarce resources in innovation projects in order to sustain and develop a firm's long-term competitive advantage and sustainable growth (Spieth & Lerch, 2014). The new high growth economies of the world are increasingly pressing forward as active IT development drivers (Brown & Brandt, 2014). IT has been playing an increasingly important role in global business (Liu & Hua, 2013). It is necessary to discover the shortcomings in IS capability factors that must be improved from the individual, group, or organization levels, and develop the suitable frameworks for IT strategy based on IS foundation (Yeh, Lee, & Pai, 2012).

A fundamental assumption of PM practice and research is that using PM to achieve organizational objectives effectively improves organizational performance in global business (Pollack & Adler, 2014). The relationship between KM and organizational performance has been the subject of discussion in management literature (Chuang, Liao, & Lin, 2013). Effective KM should be coherent and based on organizational strategy (Bagnoli & Vedovato, 2014). The integration of business process management and KM helps organizations to improve temporal, qualitative and cost aspects of the provision of goods and services and to increase their innovative capacities (Schmid & Kern, 2014).

Managing complex project requires effective team collaboration and information management strategy to support the development of project (Santos, Soares, & Carvalho, 2012). Increasing business performance and gaining competitive advantage are frequently considered as the reliable applications for KM and IT (Anantatmula & Kanungo, 2008). IT is changing the management environment and accumulating huge data (Li, Li, & Chen, 2014). A commitment to effective KM in the context of a project-based business strategy is emerging as an important process of establishing and sustaining competitive advantage in the digital age (Ajmal, Helo, & Kekale, 2010).

The strength of this chapter is on the thorough literature consolidation of IT and KM in PM metrics. The extant literatures of IT and KM in PM metrics provide a contribution to practitioners and researchers by describing a comprehensive view of the functional applications of IT and KM in PM metrics to appeal to different segments of IT and KM in PM metrics in order to maximize the business impact of IT and KM in PM metrics.

BACKGROUND

The information age is one of the most argued topics in recent years (Işık, 2013). The IT is universal in nature because modern IT crosses organizational activities, and has become aligned with business activities (Ko & Fink, 2010). The use of technology has caused critical dependency on IT. The economic and administrative world deals with government service delivery, thus involving a complex mix of political, organizational, technical, and cultural perspectives (Sethibe, Campbell, & McDonald, 2007). In the view of increasing levels of business and technology change, chief information officers (CIOs) should build the standardized and flexible IT architectures in IT organizations (Brown, 2006).

Organizations respond the business challenges through strategic initiatives (de Oliveira Lacerda, Ensslin, & Ensslin 2011). Organizations hope to improve corporate competitiveness and business enterprise through the practical implementation of IT strategy (Yeh et al., 2012). Stylianou et al. (2013) stated that organizations can derive competitive advantage from developing and implementing IS. If project-based organizations wish to initiate KM initiatives, they must ensure that members of project teams are familiar with KM, and have a clear strategy for contributing to the specific KM initiatives (Pieris, David, & William, 2003). KM is an array of interdependent activities aimed at developing and properly managing an organization's knowledge (Liao, 2011). KM is expected to improve and create competitive advantage for business enterprises (Shih & Chiang, 2005).

Knowledge within projects is positively related to the PM methodology and the communication practices in projects (Hanisch, Lindner, Mueller, & Wald, 2009). However, Anantatmula and Kanungo (2008) stated that there is the disconnected relationship among IT, KM, and the performance of busi-

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