Chapter XXIX

The Influences and Impacts of Societal Factors on the Adoption of Web Services

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ABSTRACT

The objective of this chapter is to identify and analyze implications of social factors on the adoption of Web services technology. Web services allow organizations to streamline their business process applications and expand their market boundaries to global level. Currently, adoption of Web service technology is in the early phase, as organizations are experimenting with it behind secured firewall. Technological immaturity and cost of adoption are considered as primary factors for slow adoption of Web services technology. However, global reach of Web services allows it to be used in different cultural, geopolitical, and infrastructural conditions. Therefore, this chapter explores influences and impacts of societal factors on the adoption of Web service technology. Societal factors considered in this study are culture, social structure, geography, ethics, and trust. Common themes identified across these factors are need for mechanisms to support globalization management, to monitor and assess trustworthiness, and relationship management.

INTRODUCTION

Over the years, the Internet infrastructure has emerged as a technological platform for enterprise applications to access and share information (Alonso, Casati, Kuno, & Machiraju, 2004). The growth of Internet with technologies such as eXtensible Markup Language (XML) has changed the way business collaboration are supported (Benatallah, Dumas, Fauvet, & Rabhi, 2003). In particular, Web service, which is built on top of existing Internet infrastructure, provides an
open and XML-based standardized framework for application-to-application interaction.

Web service, following Service-Oriented Computing (SOC) paradigm, promises to solve problems of application integration. The SOC paradigm provides characteristics of loose coupling and dynamic binding by positioning its basic essence of computing as a “service” (Curbera, Khalaf, Mukhi, Tai, & Weerawarana, 2003). Software application (service) developed following SOC paradigm defines their functional requirements and capabilities in standardized machine-readable format. Services represent the basic building blocks, which can be combined in particular ways to achieve business goals. Moreover, Web service is a collage of standards and technologies (Sleeper & Robins, 2001), which allows applications to communicate with each other, regardless of language or platform it was developed and location of the application on the Internet (Manes, 2003). Thereby, solving problems of tight coupling, hard-coding, and heavy-handed implementation of application integration.

Web services technology has received significant amount of attention from both academicians and practitioners. Despite growing interest and recent efforts, Web services is confronted with several critical problems that severely undermines usability of Web services and therefore hindering widespread adoption (Ran, 2003; Umapathy & Purao, 2007b). In organizational context, adoption of new technologies such as Web services can be described as commitment to invest resources towards implementing and using a technology to support core business functionalities (Magnusson, 2004; Rogers, 1995).

There are few research articles that provide analysis on factors affecting the adoption of Web services technology in organizations. There have been some research works on understanding technical factors that affect development of Web services (Gottschalk, Graham, Kreger, & Snell, 2002; Papazoglou, 2003; Tsalgitidou & Pilioura, 2002). There also have been some research works to understand Web service adoption from the business and industrial perspectives (M. Chen, 2003; Ciganek, Haines, & Haseman, 2006; Haines, 2004; Tilley et al., 2002). Primary factors for slow adoption of Web services technology are considered to be technological immaturity and cost of adoption (A. N. K. Chen, Sen, & Shao, 2006; Ciganek et al., 2006).

Web services not only changes the way of conducting business for organizations; it also helps them to streamline business process applications and expand their market boundary to global level. Even though strategic driver for Web services has been organizational needs, the adoption of Web services has social implications. Global reach of Web services allows it to be used in different cultural and infrastructural conditions. Therefore, adoption of Web services technology impacts software development, nature of enterprise systems jobs, and how businesses operate (Ciganek et al., 2006). Therefore consideration of social factors is very important while developing and adopting Web services technology.

Whenever the meaning of context has moved beyond organizational level to include societal and global level, the information systems discipline has been confronted with significant challenges (Walsham, 2000). As Web services technology allows organizations to collaborate with global partners, understanding implications of societal factors are highly important before the heavy investments of resources are made for developing and implementing Web services. However, implications of social factors on Web services are severely under-researched.

The objective of this study is to identify social factors that can influence and impact on the adoption of Web services technology. Walsham (Walsham, 2000) suggests that study of use of information systems in different cultural contexts will be social level of analysis. Therefore, this study would be conducted at the societal level of analysis and utilize the influence/impact framework (Trauth, 2000) to understand the societal