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LEVELS OF WEB SERVICE ADOPTION: FROM TECHNICAL SOLUTION TO BUSINESS OPPORTUNITY

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Abstract

This article presents a theoretical framework distinguishing four systematically different levels of Web Service technology adoption. The framework is related to Swanson’s IS innovation theory. Based on IS innovation theory the conjecture is made that each level of Web Service technology adoption has important differences in adoption requirements and potential outcomes. The framework is intended to be used as a tool to evaluate Web Service technology adoption and may consequently help devise strategies to effectively adopt Web Service technology.

Web Services adoption may range from providing simple connectivity between applications to providing complex and flexible functionality to external consumers. The implications for IS and the organization as a whole are presumably very different depending on how and for what purpose Web Services are being adopted. Simply looking at whether or not an organization is adopting Web Service technology is therefore not sufficient. A differentiated perspective is needed to examine the implications of Web Services adoption and to develop effective adoption strategies.

Swanson argues that “innovation types are significant in part because research findings suggest that facilitation factors vary among them, and further, that adoption sequences and timing may also vary systematically.” By matching levels of Web Service technology adoption to innovation types, the author makes the conjecture that there are systematic differences between the levels of adoption (see Table 1) with significant implications related to adoption strategy as well as organizational requirements for successful adoption.

Keywords: Innovation, technology adoption, Web services

Table 1. Levels of Web Service Adoption

Level of Adoption	Typical Characteristics	Type of Innovation
1. Technical Solution	Web Services are typically consumed from external providers, small scope, no or very little integration, insignificant impact on organizational structure or processes	Type 0: (not part of Swanson’s theory!) Use of Web Service provides no or very little innovation Little cost and no potential for significant competitive advantage, Easily substituted with other technology
2. IT Solution	Web Services are provided and consumed internally, larger scope, Web Service technology is used as key integration mechanism, Significant changes in IT architecture and processes	Type I: Innovation impacts mostly IT structures and processes, Potential for cost-advantage

Level of Adoption	Typical Characteristics	Type of Innovation
3. Internal Business Solution	Web Services are provided and consumed internally, Business unit or organization-wide scope, High level of integration with business applications, Significant changes in internal organizational structure and processes	Type II or Type III (a): Innovation related to the administrative or business core of the organization, Potential for cost and competitive advantage through internal flexibility
4. External Business Solution	Web Services are provided to external consumers, Large scope, High level of integration with business applications, Significant changes in organizational structure and processes	Type III(b,c): Innovation of core business processes, New products and services, Potential for competitive advantage through new information services