

Chapter 4.1

The Role of Web Services: A Balance Scorecard Perspective

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ABSTRACT

This chapter aims to examine the extent of Web services usage and quality, applying the balanced scorecard methodology in a small business firm as an exploratory case study. This chapter contributes to guidelines and lessons learned that will inform, educate, and promote small businesses on the importance of maintaining the quality of Web services.

INTRODUCTION

The Internet, a rapidly expanding global computer and communication infrastructure, has facilitated the emergence of digitization and globalization that in turn has permitted businesses to extensively engage in foreign investments. Forrester Research suggests that e-commerce in the U.S. will grow 19%, reaching \$230 billion by 2008. Today, firms are attempting to attain their value chain goals by offering to sell products and services. Web services have become a significant part of small business,

as they are used to facilitate the seamless flow of business transactions and are known to offer many benefits.

However, studies also show that the lack of effective use, quality, and security in Web service applications is one of the main reasons why firms fail to realize the full potential of their IT investments (Benko & McFarlan, 2003). It is imperative that small businesses focus on the quality of Web services and their operations given the extent to which Web service applications are used in business processes in this fast changing market conditions. Enforcing and maintaining the quality of Web services does not only involve a set of security analyses and audit procedures that most firms conduct periodically, but rather it is a continual process that needs to align a rigorous methodology. Such methodology is the balanced scorecard, which is a set of quantifiable measures that aim to monitor and manage a firm's strategic performance. This chapter aims to examine the extent of Web services usage and quality by applying the balance scorecard methodology in a small business firm.

The balanced scorecard is needed to align, monitor, and adjust the factors that impact the quality

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of Web services. Previous studies applying the balanced scorecard in the context of Web services and quality is limited. Only 10% of the organizations executed their implementation strategy to apply the balanced scorecard methodology because they experienced barriers in formulating a vision, allocating resources (i.e., human resources), and managing change (Niven, 2003). This chapter aims to examine the extent of Web services usage and quality, applying the balanced scorecard methodology in a small business firm as an exploratory case study. The next section discusses the theory of balanced scorecard and Web services followed by the development of a framework which integrates the critical success factors. Then we discuss the research method and provide a description of the background information of the firm. We then test the framework via an exploratory case study and report the findings. The findings contribute to guidelines and lessons learned that will inform, educate, and promote small businesses on the importance of maintaining the quality of Web services. Finally, we conclude the chapter with contributions and directions for future research.

BACKGROUND INFORMATION: THE BALANCED SCOREBOARD

The balanced scorecard deployed to measure the effective use and quality of Web services among small businesses focuses on a system that enforces measurement and feedback, thereby imposing quality, continuous improvement, employee empowerment, and strategic performance that aim to sustain the competitive and strategic objectives. The balanced scorecard measures the performance of Web services in a small business firm from four perspectives, namely, learning and growth, internal business processes, customer, and financial perspectives, which are discussed below. Each of these four perspectives is further categorized by their objectives (as in what are

their outcomes?) measures (as in how to achieve their outcomes?) targets, that is, accountability (as in how do we know that we have achieved it?), and initiatives (as in what actions to take?). Further, the balanced scorecard is based on three time dimensional timelines, namely, yesterday, today, and tomorrow. The next section presents a discussion of the four perspectives.

1. The *learning and growth perspective* aims to measure the human, information, and organizational capital. Human capital includes the skills, knowledge, expertise, the extent of training given to employees, and the business cultural attitudes. Do small business employees have the skills/competencies to operate the Web service application and align it with their internal business processes effectively in order to meet their customers' objectives of using Web services? Information capital aims to measure effective communication and information sharing. Do small business employees possess the information required to achieve objectives? Organizational capital aims to monitor the soft areas of the employees, such as, learning and growth, culture, leadership, knowledge sharing, and teamwork. Do small businesses have the ability to sustain growth and change that in turn enhances the quality of Web services?
2. The *internal business process perspective* aims to measure performance that permits small businesses to be aware of the quality of their products and services. Web services, considered as system quality, are defined as "the conformance to explicitly stated functional and performance requirements, explicitly stated development standards, and implicit characteristics that are expected of all professionally developed software" (Solano, De Ovalles, Rojas, Padua, & Morales, 2003, p. 67). Similarly, Ortega, Perez, and Rojas (2000) suggest that product effectiveness should include characteristics

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