

# Chapter 12

## Internet Technologies and Innovation: A Framework Based on the Study of Brazilian Companies

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### ABSTRACT

*The Internet has become ubiquitous in the business environment. Hence, innovative companies need to utilize all the sources that this medium can provide. The voices of consumers are shared by the use of many Web tools and may be advantageous in the innovation process. Information architecture needs conceptual models to facilitate the development of its deliverables in the form of blueprints, sitemaps, wireframes, personas, and so on. Based on the findings of a scoping review of the relevant literature and a case study on Brazilian companies, both a theoretical reference and a framework are presented. This chapter aims to highlight that some Internet technologies should be used throughout the stages in the innovation process. Because each technology has both benefits and limitations, the framework may be used to indicate the technologies that are the most appropriate based on the evidence collected. Finally, some implications of each technology for innovation are discussed.*

### INTRODUCTION

The information available on the web has grown exponentially, which is driven by the massive amount of participation of individuals and companies in

this channel. The opinions of individuals, whether they are in the form of criticisms or suggestions, can be used by companies to develop new products or even improve existing ones. Defining important factors in the information architecture that is fo-

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cused on web-based innovation can facilitate the implementation of effective information systems to support decision making in the development of innovative new products. The interconnection of many ecosystems is an additional problem for information architects and may lead to different ways of thinking about the factors involved, such as the sitemap and the consumers. The effective integration of consumers in the innovation process demands the complete assessment of the available technologies and their role in this process.

Web-based innovation has been the goal of many companies. Gathering the collective knowledge available on the Internet as input into the new product development process demands a well-structured information architecture. This chapter describes the theoretical underpinnings of these initiatives and provides insights gleaned from the investigation of practices in innovative Brazilian companies. In addition, it presents a web-based framework for the innovation process. By using this framework, it is possible to establish the aspects of an information architecture that are competitive in the innovation environment.

The purpose of this chapter is to provide insights into the elements of information architecture concerning innovation and new product development by using information available on the web in order to further the reader's understanding. Considering that academic researchers may be interested in the results of case studies and that companies may need background in order to develop web innovation, the main objectives of this chapter are as follows: provide a scoping review of the relevant literature; contextualize web-based innovation in the field of study and its key technologies; provide a theoretical framework for innovation and new product development; present and discuss a framework of web-based innovation based on the practices of Brazilian companies.

## **INNOVATION AND NEW PRODUCT DEVELOPMENT**

Innovation studies date to the 1960s. However, the early research was not expanded until the 1990s when efforts of the European Community, in association with other countries, resulted in a series of manuals designed to assist in monitoring numbers and forms of innovation (manuals of Oslo, Frascati, & Canberra). However, despite the concern about what it means to innovate, both academics and professionals still have difficulty understanding the subject because it encompasses economics, technology, administration, and so on.

Nelson and Winter (1982) published one of the most influential works in innovation studies. They provided reasons for how organizations and industries change over time, thereby challenging the classical foundations of economics, which they considered insufficient to analyze the technological innovations and the dynamics of firm competition. Dosi (1982) found similarities between the technological paradigms and scientific paradigms outlined by Thomas Kuhn in 1962, stating that a technology is contextual to the associated industrial structures. In his view, technical advances are limited by current technological paradigms, which impose barriers to radical innovations that are associated with emerging technological paradigms.

As innovation studies began to focus on internal aspects of the organization, the notion that innovators are not the only ones to profit from innovation was posited by Teece (1986). Research that studied the phenomenon attributed it to three building blocks: appropriability regimes, complementary assets, and the dominant design paradigm. Thus, innovating companies should seek additional resources to improve their competitive advantages. Teece, Pisano, and Shuen (1997, p. 516) proposed that dynamic capabilities comprised the "ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments." The lack of interest in the topic by

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