Chapter VII
Analyzing the Disruptive Potential in the Telecommunications Industry

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ABSTRACT

This chapter covers an important issue in the area of telecommunications planning and technology management: The ex ante analysis of potential disruptive technologies. Due to the convergence of IT and telecommunications, an ever-growing onslaught of emerging technologies and new entrants with new business models are starting to eat up the incumbent's revenues, profits, and market shares. The theory of disruptive technology (Christensen, 1997; Christensen & Raynor, 2003) helps managers, policy-makers and analysts to analyze emerging technologies, new business models, and new entrants in order to be prepared in advance, providing appropriate ways to react in a timely fashion to innovation-based opportunities or threats. In this chapter the theory of disruptive technology, the concept of disruptive potential and a method for applying this concept in a telecommunications planning and technology management context is presented. Finally, some examples of potential disruptive technologies in telecommunication which were analyzed ex ante are introduced with specific emphasis placed on the WLAN-technology.

INTRODUCTION

The telecommunications industry has been undergoing a radical transformation since the beginning of the new century, creating new opportunities and new challenges for infrastructure and service providers (Christensen, Anthony, & Roth, 2004; Lia & Whalleyb, 2002). The formerly established integrated value chain is increasingly being deconstructed, industry borders are becoming increasingly blurred due to convergence between the Internet and telecommunications industry is

being radically restructured with the entry of new players (Bores, Saurina, & Torres, 2003; Lia & Whalleyb, 2002). Unexpectedly, discontinuous technological developments in various areas of the industry and increasing market turbulence have added new dimensions to an already complex scenario. Many traditional business models, as well as related frameworks, tools, and methods have become obsolete. Therefore, the development of new conceptual frameworks for understanding these changes in the telecommunications and related industries; and the creation of new tools and methods for identifying opportunities and threats, and making new strategies is becoming a central task for academia. In the new environment of uncertainty and ambiguity managers, policy-makers, researchers and analysts are in need of improved and new theoretical based frameworks to gather and interpret information in another way to finally recognize the opportunities and threats emerging from discontinuities faster and more effectively.

So far the industries' track record in innovation is quite mixed with 3G and the mobile Internet, Multimedia Messaging Service (MMS) or the attempts to transfer i-Mode to other contexts than Japan (Christensen et al., 2004; Hüsig et al., 2005; Lyytinen & King, 2002; Rao, Angelov, & Nov, 2006). Quite frequently innovations from outside the inner domain of the telecommunication industry are introduced by outsiders like Skype with Voice over Internet Protocol (VoIP) or Cisco Systems with their IP-routers which took and take away customers and revenues from the traditional incumbents in telecommunications (Christensen et al., 2004; Rao et al., 2006). Some traditional infrastructure suppliers in the telecommunication industry like Siemens or IBM already went almost completely out of this business with their circuit-switched technologies which were disrupted away by Cisco Systems – a new entrant with a new technology which the incumbents never managed to adopt effectively (Christensen et al., 2004). It seems that managers and analysts in telecommunications need better tools and methods to effectively identify and counteract disruptions like these. The theory of disruptive technology (Christensen, 1997; Christensen & Raynor, 2003) helps managers, policy-makers and analysts to analyze emerging technologies, new business models, and new entrants in order to be prepared in advance, providing appropriate ways to react in a timely fashion to innovation-based opportunities or threats. However, not many scholars have tried to apply this theory to the field of telecommunications (Christensen et al., 2004; Hüsig et al., 2005; Osterwalder, Ondrus, & Pigneur, 2005; Rao et al., 2006). Therefore, a more comprehensive and easily applicable method for identifying disruptive technology threats from an ex ante perspective had to be developed further, and is elaborated here. For managers, policy-makers and analysts in telecommunications a more applied version of the theory of disruptive technology in form of recently developed tool provides a better guideline for this important issue in the area of telecommunications planning and technology management.

In this chapter, we present first the disruptive technology theory, then the concept of disruptive potential, and a method of applying this concept in a telecommunications planning and technology management context. Finally, some examples of potential disruptive technologies in telecommunication which were analyzed ex ante are introduced with specific emphasis placed on the WLAN-technology.

THE CONCEPT OF DISRUPTIVE POTENTIAL

The Disruptive Technology Theory

In order to grasp the concept of disruptive potential it is essential to understand the theoretical underpinning first: The disruptive technology theory. The theory of disruptive technology or disruptive