Disruptive or Sustaining Impact of WLAN Hotspots?  
The Role of Business Model Innovation in the Western European Hotspot Markets  

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In this paper the impact of WLAN-technologies on mobile data communications in the case of the incumbent telecommunications firms and entrants in the Western European hotspot markets based on a disruptive innovation perspective is described and analysed. The main proposition to be analysed is whether or not WLAN has developed disruptive potential for the incumbents in this market so far: The results imply that incumbents and new entrants have taken advantage of the opportunity provided by WLAN technologies and the public hotspot market in Western Europe. Although the market success of both types of players varies between the countries analysed, in most Western European countries the incumbents dominate the public hotspot market. This result suggests a predominantly sustaining impact of WLAN technologies on the incumbents based on a country basis. However, the sustaining impact of WLAN is weaker if alternative business models, such as free or community network hotspots, are taken into account.

Keywords: Business Model Innovation, Disruptive Innovation, Disruptive Technology, Hotspots, Radical Technological Change, Sustaining Technology, Telecommunications, Wireless & Mobile Data Services, WLAN

INTRODUCTION

Clayton Christensen’s work on disruptive technology and related theories have received extensive coverage and attention in business publications, management research and practise (Danneels, 2004; Hüsig et al., 2005). The term “disruptive technology” finds more than 300,000 entries in Google which is quite close to the more traditional innovation category “radical innovation” with around 495,000 Hits in the beginning of 2011. Not many scholars achieve similar success in popularising their key concepts. All of the historical case studies of Christensen are disruptive technologies that did succeed (Christensen, 1997; Christensen & Raynor, 2003). However, the real challenge to this theory, especially if it is to be useful managerially, is how it performs predictively (Danneels, 2004). In other words, can the theory be used not only to analyze cases post hoc but also to predict the outcome of cases ex ante? For managerial purposes, Christensen’s framework would be most useful if it allowed a manager to

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recognize which technology will succeed and will become disruptive. Therefore, Danneels (2004) recommends predictive tests to rule out chance as an alternative explanation and to test those predictions ex post. This paper adds this ongoing discussion examining whether the disruptive technology framework is useful for ex ante predictions about (potentially) disruptive technologies by using the ex ante analysis of the disruptive potential of WLAN-technologies by Christensen et al. (2004) and Hüsig et al. (2005), and compares them to an up-to-date ex post analysis of the disruptive impact of the forecasted potential disruptive technology.

Wireless local area network (WLAN) technologies on the basis of 802.11 wireless Ethernet standards have been one of those technologically induced hypes in the wireless communication services field. Expectations and forecasts created a huge interest in WLAN technologies and related phenomena like public hotspots in the telecommunications industry, business press and academia (Christensen et al., 2004; Hüsig et al., 2005). From the theoretical perspective of Christensen (1997) and Christensen and Raynor (2003), WLAN technologies could be seen as disruptive for incumbent MNOs’ (mobile network operators) data services, since they enable wireless Internet service providers (WISPs) to offer short distance, high speed data services in heavily trafficked areas known as hotspots. Typically, telecommunication incumbents such as MNOs (mobile network operators) foster integrated data and voice services via mobile networks and related mobile communication standards, whereas WLAN, or Wi-Fi, refers to the 802.11 wireless Ethernet standards that were designed to support wireless LANs (Lehr & McKnight, 2003). Various authors from business and academia have suggested that there is a disruptive potential of wireless local area network technologies for mobile network operators (Camponovo & Pigneur, 2006; Christensen et al., 2004; Hüsig et al., 2005; Martikainen, 2006; Wieland, 2007). Recent research by Gunasekaran and Harmantzis (2008) shows, that the discussion whether MNOs should see Wi-Fi as a complementary or as a competitive technology to cellular is still ongoing. Additionally, the threat caused by public WLAN hotspots could be amplified by the emergence of WiMAX (Worldwide Interoperability for Microwave Access) if it is integrated in the Wi-Fi ecosystem since WiMAX could be used as backhaul for Wi-Fi or to provide larger coverage for wireless metro area networks (MANs) (Gunasekaran & Harmantzis, 2008; Martikainen, 2006).

However, previous research has typically taken a predominately ex ante perspective, since the public hotspot market has been developing rapidly (Christensen et al., 2004; Hüsig et al., 2005). Over the last few years, particularly the public hotspot market and WLAN technologies have developed further and more empirical evidence has become available. Therefore, the aim of this study is to shed further light on the question of whether WLAN has disruptive potential for incumbent telecommunications firms or not from an ex post perspective using a larger data set from the hotspot market in Western Europe. Using this data, previous predictions about WLAN technologies and related forecasting frameworks can be further analysed and initial empirical evidence validated. In order to clarify the question whether WLAN has disruptive potential or not in the Western European context, the following questions will be addressed in this paper:

- How has the hotspot market developed in Western Europe?
- Who has led so far in Western Europe, entrants or incumbents?
- Measured by the market success in the hotspot market—have the WLAN technologies shown a more sustaining or disruptive impact on the incumbents so far in the Western European context?
- Which role did the business model play in the impact of new entrants in the Western European context?

The paper is structured as follows: First of all, a brief overview of the disruptive innovation theory and the concept of disruptive potential are given. Then I present the state of knowledge
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