Chapter 9
The Rise of MP3 as the Market Standard:
How Compressed Audio Files Became the Dominant Music Format

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ABSTRACT

Previous research has shown how various technologies became the market standard. This chapter presents some refined models and applies them to the case of compressed audio formats. The authors analyze the rise of MP3 as the market standard and identify several key factors that contributed to its success. First, a process of formal standardization reduced the number of competing compressed audio formats. Secondly, enabling technologies, in particular the rise of the Internet, contributed significantly to the success of compressed audio formats. The timing of market entry was important in the sense that when the rise of the Internet took place, MP3 was one of the few fully developed compressed audio formats. MP3 offered technological superiority (high fidelity at low data rate) versus its initial competitors. The technology also benefitted from dedicated sponsors that promoted market adoption. Due to the weak regime of appropriability, audio files in the MP3 format managed to spread quickly over the Internet. Lastly, the availability of complementary assets for MP3 fueled its market adoption and strengthened network externalities on both sides of the platform-mediated network.

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1. INTRODUCTION

The recent downfall of the iconic photography company Kodak, caused by the paradigm shift from analog to digital photography, is a clear example of an innovative market leader that was among the first to identify a radical innovation but chose to bypass the opportunity because it cannibalized its existing market. Clayton Christensen first described this 'innovator's dilemma' in his bestselling book (Christensen, 1997). He showed that an excessive customer focus may prevent firms from creating new markets and finding new customers for the products of the future. As they unwittingly bypass opportunities, such firms clear the way for entrepreneurial companies to catch the next wave of industry growth.

In the last two decades, we have witnessed how audio codecs, in particular the MP3 audio compression format (also known as the MPEG-1 Layer 3 standard), changed the music industry. In 1995, when a representative of one of the organizations behind MP3 presented the idea of compressed audio distribution using the Internet and copy protection to the music industry, they replied "It all sounds very interesting, but what does this have to do with us?". Not only did the music industry fail to embrace the opportunity for music distribution over the Internet, but so did the market leaders in consumer audio equipment which were involved in audio compression.

This paper examines the rise of the MP3 audio compression technology, from its inception to when it became the dominant music format. It shows how a disruptive technology can change an industry and offer opportunities to new entrants. In the following sections, we will summarize previous research on platforms and platform competitions, and describe our research methodology. This is followed by a detailed case description, case analysis and our conclusions.

2. THEORETICAL OVERVIEW

The body of literature on management of technology and innovation, labels compressed audio formats as platform technologies. Platforms are products, technologies or services consisting of core components which remain stable, and interfaces which allow the core components to operate with complements as one system (Baldwin & Woodard, 2009). Interfaces are often codified into standards. Platforms may occur on multiple levels of a product's architecture: a personal computer is a platform, and its operating system as well. Platforms may enable 'platform-mediated networks', facilitating the interaction between two groups of users, the supply network (which provides complementary products) and the demand network (Eisenmann et al., 2006). For example, in the case of the Compact Disc platform, the record labels constitute the supply network and the consumers constitute the demand network. Other well-known examples where content providers and consumers interact through platforms can be found in the video (e.g. VHS and DVD) and videogame industry (e.g. PlayStation). The platform's value to a user depends on the size of the network on the other side, and the two networks attract each other (Rysman, 2009). This phenomenon whereby the functionality for a user increases, i.e. complementary goods become more plentiful and lower in price, if more users join is known as cross-side or indirect network externalities (Arthur, 1994; Arthur, 1996; Eisenmann et al., 2006; Liebowitz