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## Superstars and outsiders in online markets: An empirical analysis of electronic books

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### ABSTRACT

Recent rapid growth in electronic book sales has raised a critical question for publishers and bookstores: do e-books cannibalize or increase print sales? In this article, we compare the best-selling titles sold on [www.Amazon.com](http://www.Amazon.com) in print or electronic Kindle formats during the period from November 2007 to July 2010. Using econometric methods, we find that the cannibalization of print sales by e-books is more likely to occur for superstar titles written by successful authors. However, we find that a new segment of successful electronic titles that are not best-selling in print format emerge; these books would probably have been unpopular without the new Kindle store and therefore this new distribution channel has expanded the market. We refer to these titles as *digital outsiders*. The latter are characterized not only by lower prices but also by older release dates. They also include titles that are only released in electronic format. We then argue that electronic books increase the market viability of old print releases. Finally we identify a category that we call *print-preferred books* that are top sellers in print but not as e-books for reasons of color, graphics, or the need to navigate non-linearly, a style to which the current generation of e-book readers are not well adapted.

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### 1. Introduction

The book industry is facing a new revolution. According to most experts, electronic books (e-books) will shake the industry in the same way that the printing press did.<sup>1</sup> Recent numbers published by the Association of American Publishers show that 49.5 million e-books have been sold in the United States in 2010 for a value of \$US441 million, an increase of 291% compared to 2009. Sales of e-books represented 8.3% of total sales of books in the US in 2010, against 3.2% in 2009.<sup>2</sup> Amazon currently sells more e-books for Kindle, their proprietary e-book reader, than print books.<sup>3</sup> Many actors in the industry view this major technological change with apprehension for various reasons. First, sales of e-books could threaten retail

stores selling print books, given the income constraint of consumers. Second, this potential cannibalization of print sales by e-books is reinforced by the entry of new online retailers such as Amazon, Apple or Google. The bargaining power between traditional retail stores and new online merchants is changing the way companies conduct business. For instance, new technologies allow writers to publish e-books directly without signing with a publisher.<sup>4</sup> Finally, editors and publishers fear illegal copying on the Internet of copyrighted material that could reduce their income.

This article directly addresses the issue of the cannibalization: do e-books cannibalize or instead increase print sales? In this study, we focus on the characteristics of books that are bestsellers in both print and electronic formats, bestsellers in print but not as e-books, and successful as e-books but either currently less successful in print or have no print equivalent. We refer to the first group as *superstars*, the second as *print-preferred* and the third as *digital outsiders*. Paper may be preferred for reasons of color,

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<sup>1</sup> See, for instance, "Using e-books to sell more print versions," *New York Times*, June 26, 2011; or "how thee-book will change the way we read and write," *Wall Street Journal*, April 20, 2009.

<sup>2</sup> The press release is available at [www.publishers.org/press/24/](http://www.publishers.org/press/24/).

<sup>3</sup> A press release indicates that: "Since April 1 [2010], for every 100 print books Amazon.com has sold, it has sold 105 Kindle books," [www.phx.corporate-ir.net/phoenix.zhtml?ID=1565581&c=176060&p=irol-newsArticle](http://www.phx.corporate-ir.net/phoenix.zhtml?ID=1565581&c=176060&p=irol-newsArticle).

<sup>4</sup> See two illustrative papers from [Guardian.co.uk](http://Guardian.co.uk): "Amanda Hocking, The writer who made millions by self-publishing online," and "Self-published e-book author becomes Amazon's top seller." Amazon's success with self-published authors in the U.K. follows the U.S. arm of the retailer's announcement last year that two self-published authors, John Locke and Amanda Hocking, had sold more than 1 million books on the Kindle. Hocking went onto sign a reported U.S. \$2 million deal with St Martin's Press, while Locke has signed up with Simon & Schuster.

graphics, or need to navigate non-linearly, a style to which the current generations of e-book readers are not well adapted. To do so, we have run automated scripts to collect all titles that have appeared in the monthly top 100 list of best-selling print and electronic books from the US Amazon websites. The period of the sample ranges from November 2007 to July 2010, for a total of 33 months. There are 1861 unique titles in the set of print and electronic books that we compare. The focus on the US market is justified by the faster development of the US e-book market compared to other countries. Using econometric methods, we find that the cannibalization of print sales by sales of electronic books is more likely to occur for superstar titles written by successful authors. However, we find that a new segment of successful electronic titles that are not best-selling in print format emerge as digital outsiders; these books would probably have been unpopular without the new Kindle store and therefore this new distribution channel creates a market expansion effect. These digital outsiders are characterized not only by lower prices but also by older release dates. They also include titles that are only released in electronic format. We then argue that electronic books increase the duration of popularity of older print releases.

The remainder of the article is organized in four sections. We review the literature in Section 2. In Section 3, we describe the data and compare the bestselling books in print and electronic formats. In Section 4, we explain the probability that a bestselling print book is also bestselling in its electronic version by a set of book characteristics. We also characterize digital outsiders and show that they either correspond to electronic books that do not exist in print formats or to old releases that Internet users want to rediscover through the electronic store. Section 5 concludes.

## 2. Related literature

The issue of cannibalization or disintermediation has been a central question since the early days of the Internet and has taken a new turn in recent years. The Internet first created a new sales channel for *physical cultural products* and rapidly a growing empirical literature has emerged to assess how the Internet has impacted the sales of *physical goods* on offline channels (Balasubramanian 1998). This research led to the formulation of the *long tail theory* (Anderson 2005). According to the latter, cultural industries which are characterized by superstar products and *winner-takes-all* phenomenon (Rosen 1981) – a small portion of artists, writers and films account for most sales in the market – should be impacted by the Internet, which lower search costs and allows internet users to share information within online communities. As a result, the Internet should make cumulative sales of *niche products* (obscure or unknown) profitable and thus flatten the distribution of total sales of cultural products (Brynjolfsson et al. 2003). This prediction, however, remains controversial in the economics literature (Elberse and Oberholzer-Gee 2007).

In the specific context of the book market, Chevalier and Goolsbee (2003) and Ghose et al. (2006) have found that online channels result in a relatively small cannibalization of print sales.<sup>5</sup> Likewise, Bounie et al. (2011) have compared the top 100 weekly best-selling books in France via three different distribution channels: Amazon, Amazon Marketplace and physical stores during the period from March to August 2006. They show that on average only 11% of all books ever entered all three lists of weekly top 100 best-selling items. Old releases are more successful in the electronic markets (Amazon and Amazon Marketplace) than in traditional physical

stores.

The issue of cannibalization has now taken a new turn with the increasing availability of *digital cultural goods*. Indeed, new formats have appeared on the Internet such as digital music (iTunes, Spotify, etc.) or online films and movie downloads (iTunes, Amazon Instant Video, Google Play, Netflix, YouTube, etc.). Likewise, the development of e-books has led to an increasing popularity of the Kindle store. The emergence of these new formats raises a new question: do *electronic formats* cannibalize or instead increase the sales of *physical cultural products* that can be sold through physical or online channels? Indeed, consumers not interested in print formats could now be interested in purchasing new electronic formats. This market expansion could not only be the result of decreasing search costs and online communities but could also be driven by a new demand for electronic formats (increased portability, library of books always available, bookmarks and annotations, etc.). The long tail theory should, therefore, be extended to account not only for the effect of online distribution channels on print sales but also the impact of new electronic formats on the variety of cultural products purchased by Internet users.

Several empirical papers have addressed this question. Focusing respectively on the introduction of online newspapers and music, Deleersnyder et al. (2002) and Biyalogorsky and Naik (2003) find a relatively small cannibalization effect on physical newspaper circulation or record sales, though these findings are currently being debated. Koh et al. 2010 show, for instance, that digital music substitutes for physical album sales whereas Nguyen et al. (2012) find that consuming music as streams has no impact on CDs purchases.<sup>6</sup> Finally, focusing on videos and TV, Waldfogel (2009) shows that the YouTube platform, which allows users to stream videos online, has only a small negative impact on television viewing. Danaher et al. (2010) find that the iTunes distribution channel has no significant statistical impact on DVD sales.

To the best of our knowledge, few studies have analyzed the market expansion and cannibalization issues in the book industry due to the emergence of an electronic format.<sup>7</sup> Jiang and Katsamakos (2010) use a game-theoretic model to study the effects of the entry of an e-bookseller on prices and total book readership. They find that prices in the book market may increase after the entry of an e-bookseller and that the total readership may decrease, if the e-bookseller is owned by one of the print booksellers. In an empirical context, Oestreicher-Singer and Sundararajan (2010) examine the e-book industry but only focus on the pricing strategy of e-book publishers and their choices of technological protection (with or without piracy).

The closest paper to our research is probably Hu and Smith (2011). They study the impact of the decision of a publisher to stop releasing Kindle e-books on the Amazon website. This leads to a natural experiment where a title is initially only available in print format and later on available in both print and electronic formats. These titles can be compared to a control group of titles that were available in both formats during the full period of observation. They find that delaying the release of e-books causes an insignificant change in overall hardcover sales but a significant decrease in e-book sales, total sales, and likely total revenue and profit to the publisher. Unfortunately, they only have one to eight weeks of observations of titles that were delayed in electronic format compared to 2 months of observations for titles in the control group, which makes a comparison based on sales difficult to interpret. Moreover, they find a negative cross-price elasticity be-

<sup>5</sup> Ghose et al. (2006) have especially assessed the impact of used print books on the sales of new print books on Amazon Marketplace during the period 2002–2003. These authors show that used print books are imperfect substitutes to new ones in the sense that only 16% of used books cannibalize sales of new print books.

<sup>6</sup> Zentner (2008) also shows that online music purchases are related to a change in the number of music stores in the United States for the years 1998 and 2002.

<sup>7</sup> Huang and Hsieh (2012) show that consumers' perceived innovative attributes not only directly affect their acceptance behaviour, but also influence behaviour via their perception of switching costs.

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