

“Digitization and its Consequences for Creative-Industry Product and Labor Markets,” Joel Waldfogel

Discussion by Gustavo Manso

The chapter studies the impact of digitization on creative products and labor markets. It argues that digitization reduces the costs of creating, distributing, and promoting products, allowing for the introduction of new high-value products. In the context of movies, television, and books, estimated welfare gains are substantial. While labor activity increases with digitization, earnings per worker fall.

Previous research has argued that digitization on product markets increases welfare by giving access to a “long tail” of low-demand products not available in local brick-and-mortar stores (Brynjolfsson et al 2003). The shaded bars in Figure 1, which represents the sales of products facilitated by digitization, illustrate such welfare gains.

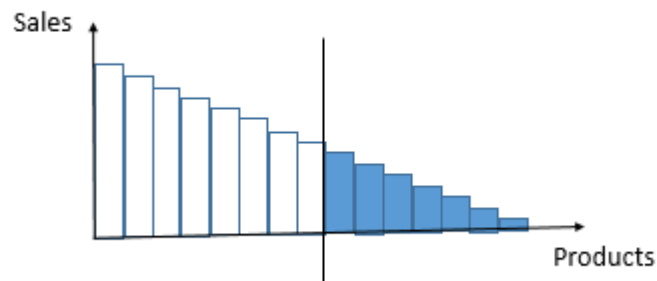


Figure 1: Conventional “long-tail”

The innovation in this chapter is to note that digitization reduces the costs of experimentation allowing potentially blockbuster products to be discovered. Rather than the conventional long-tail depicted above the chapter argues for a random long-tail, represented by the shaded bars in Figure 2. Digitization produces not only inferior products, but also blockbusters which were previously unknown. The welfare gains implied by the random long-tail are large compared to the welfare gains implied by the conventional long-tail (9 times as large for books, 13 times as large for television, 4 times as large for books).

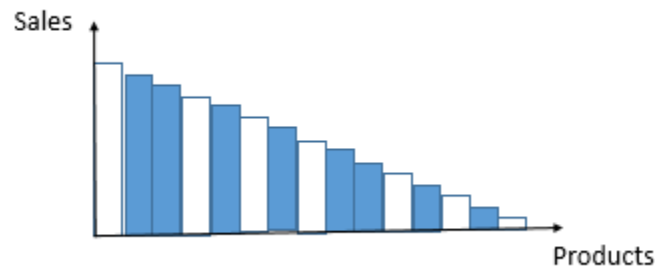


Figure 2: Random “long-tail”

There are innumerable examples of successful artists who likely would have remained unknown if not for digitization. The duo Jack & Jack made it to the top of the iTunes album chart in 2015.¹ Also in 2015, self-published writer Mark Dawson reported to be earning \$450,000 dollars a year from the books he self-published at Amazon Kindle Direct Publishing.²

The chapter also shows that digitization leads increased activity in these creative labor markets. The successful examples above are the exception to the rule though as average pay per creative worker decreases with digitization.

My discussion of the chapter will revolve around estimation challenges and relationship to the existing literature. On estimation challenges I will focus on: i) product success prediction, ii) substitution & cannibalization, iii) sales versus total surplus.

The chapter attempts to estimate the welfare increase implied by the random versus conventional long-tail hypotheses. To predict which products were made possible by digitization, the author relies on LASSO regressions with sales as the dependent variable and product characteristics as independent variables. Products that have low predicted sales are the ones made possible by digitization, and are associated with random long-tail welfare gains.

One challenge for this approach is that any estimation error in the predictive regression above tends to overestimate the random long-tail welfare gains. If the predictive regression is misspecified (e.g. omitted variable), then we may consider products that would have been around anyways as products made

¹ See <https://www.forbes.com/sites/natalierobehmed/2015/07/24/how-these-independent-artists-reached-no-1-on-the-itunes-chart/#4a18c16262a0>.

² See <https://www.forbes.com/sites/jaymcgregor/2015/04/17/mark-dawson-made-750000-from-self-published-amazon-books/#7dde47a76b5b>.

possible by digitization. As a result, our welfare gains may seem as the shaded bars in Figure 2 when in fact reality is closer to the shaded bars in Figure 1.

Another challenge is the potential for substitution or cannibalization. What if new products due to digitization are successful at the expense of other traditional products? Figure 3 illustrates this possibility. The dashed bars represent cannibalization of traditional products. Welfare gains are thus overestimated as they fail to take into account the losses new products inflict on existing products.

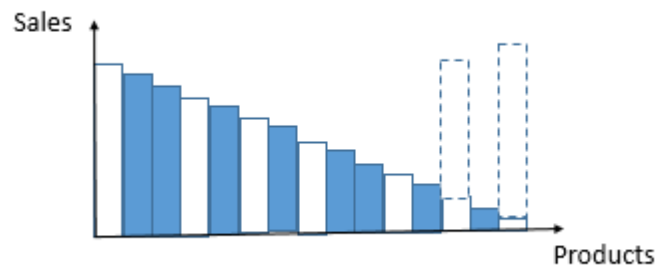


Figure 3: Substitution or cannibalization

Finally, realized sales may diverge from welfare. For example, digitization may increase competition which leads to lower prices. Sales data would miss a part of the welfare gains. Figure 3 illustrate this possibility. The dashed bar over the shaded bar represent additional consumer surplus not captured by the sales data.

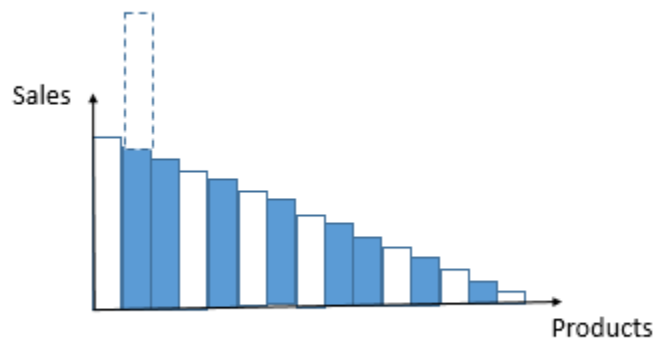


Figure 3: Sales price is different from total surplus

The “random long-tail” hypothesis has parallels in the entrepreneurship and innovation literature. As the chapter argues, “no one knows anything” about a product before its launch. This is analogous to the notion that innovation is the result of experimentation with new ideas (Arrow 1969). Weitzman (1979) uses a statistical class of decision problems, called bandit problems, to model the experimentation process that results in innovation. Bergemann and Hege (2005) and Manso (2011) consider incentives for innovation in principal-agent models in which the agent experiments with new ideas in a bandit problem setup.

Digitization reduces the costs of experimentation, since it facilitates product creation, distribution, and promotion of new products. In a related study, Ewens, Nanda, and Rhodes-Kropf (2018) analyze how the introduction of cloud computing services by Amazon in 2006, which reduces the cost of experimentation, affects venture capital (VC) investment strategy. They show that after the introduction of cloud computing, VCs switch to a “spray and pray” strategy in which they allocate small amounts of funding to many different firms without spending much time on due diligence for each project. Moreover, VCs’ new investments tend to be “long-shots,” aiming for potential blockbusters. This suggests that the random-long tail for VC investments after cloud services introduction is large, in line with the results on the effects of digitization for movies, television, and books in this chapter.

The results that average pay for the creative worker decreases with digitization are related to the literature on the returns to entrepreneurship. Hamilton (2000) and Moskowitz and Vissing-Jorgensen (2002) find that entrepreneurs earn less than salaried workers. Overconfidence, preference for flexibility, and preference for skewness are some of the proposed explanations for why individuals may still choose to become entrepreneurs.

In contrast, Manso (2016) argues that the lower observed cross-sectional payoffs for entrepreneurship do not reflect the lifetime earnings of individuals. Entrepreneurship is the experimentation of new ideas and many individuals exercise their option to abandon entrepreneurship upon failure, quickly moving back to the salaried workforce. Analyzing panel data, which takes into account the option value of experimentation, I find that entrepreneurship pays off.

Digitization lowers the cost of experimentation for creative workers. At this lower cost, they may write a book, record a song, or make a movie to learn whether they can succeed as creative workers. The average observed worker pay is thus low, because it encompasses all of these attempts at subsistence as a creative worker. Most of these want-to-be creative workers will never succeed, and will abandon the enterprise. Few can make become big hits such as the two examples at the beginning of this discussion, and will remain as creative workers.

Dominant platforms, such as Amazon Kindle Direct Publishing, iTunes, and Spotify, may facilitate the discovery of unknown creative workers, contributing to the random long-tail. However, they may also help perpetuate incumbent artists. Aguiar and Waldfogel (2018) shows that being added to Spotify Playlists drives streaming traffic, raising the probability of song success. Therefore, platforms have control over the pipeline of new artists, which can create distortions. As argued by Iyer and Manso (2020), these platforms may lack incentives to search for high quality new artists to be included on their playlists and tend to prefer to recommend status quo artists.

To conclude, the chapter argues that digitization reduces the cost of experimentation in creative industries. This allows for the discovery of high quality artists that would have not come to surface without digitization. Rather than a conventional long-tail of inferior products, digitization leads to a larger random long-tail, implying significant welfare gain. Consistent with this experimentation story, there is increased activity in labor markets, but falling average earnings per creative worker. While digital platforms help publicize the work of new artists, they may reinforce already successful artists through their recommendation systems, actually preventing experimentation. This chapter proves that digital platforms in the creative industry is a fertile ground for the study of all these and other questions.

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