



Revenue management in sports, live entertainment and arts

Mihai Banciu¹ · Andreas Hinterhuber² · Fredrik Ødegaard³

Accepted: 3 May 2023 / Published online: 11 May 2023
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Introduction

On November 15, 2022, tickets for mega-popstar Taylor Swift's long awaited 2023 US tour were released for early bird pre-sale on Ticketmaster, the online and de facto monopoly concert ticket platform.^{1,2} Due to various factors, the release was a disaster and a huge PR fiasco for both Ticketmaster and Taylor Swift. At the core of the issue was the fact that demand for Taylor Swift tickets was extremely high and Ticketmaster's servers could not handle the volume. According to Ticketmaster, their online platform received 3.5 billion requests, reportedly four times larger than any previous peak sales event.³ The platform overload happened despite mechanisms to actively manage the volume of requests, such as having potential buyers required to be pre-approved as "Verified Fans" in order to participate in the pre-sale event.

The Taylor Swift debacle was not the only PR backlash for Ticketmaster in 2022. Earlier in the summer, in conjunction with sales for another mega-star's much awaited 2023 US concert tour, namely Bruce Springsteen, Ticketmaster, and said rock-star, received much negative press when the platform's dynamic pricing algorithm allegedly made ticket prices soar tenfold.^{4,5} While well sought-after tickets notoriously exhibit surge pricing in secondary markets, in particular from scalpers, the resentment from Springsteen-fans arose because surge pricing was applied to the primary

market for face value tickets. Ticketmaster defended their dynamic pricing as a form of demand-based market pricing akin to similar practices in the airline and hotel industry.⁶

While the two above examples made headlines and fueled an already heated debate about concert tickets and Ticketmaster's market dominance, they are not typical for the entertainment industry as a whole. Few bands, musical artists, theater acts, etc. have the star power coupled with a fan-base willing to purchase tickets in numbers that exceed venue capacity by multiple orders of magnitude. The same applies to the sporting and arts industries. For blockbuster artists, sport teams, and art exhibitions, ticket sales and pricing issues appear predominantly solvable by logistics and communication. However, for the vast majority of organizations that operate in the non-traditional space of sports, live entertainment, and arts, there is an opportunity to apply standard revenue management approaches, both on the supply side via capacity controls and on the demand side via pricing.

Motivation for the special issue

Professional sporting events and leagues, and other forms of live entertainment, including theaters, musicals, concerts, and shows, are multi-billion dollar industries. To illustrate, the professional NHL Las Vegas Knights, in their inaugural

✉ Fredrik Ødegaard
fodegaard@ivey.ca

Mihai Banciu
mmb018@bucknell.edu

Andreas Hinterhuber
andreas.hinterhuber@unive.it

¹ Freeman College of Management, Bucknell University, Lewisburg, USA

² Department of Management, Ca' Foscari University of Venice, Venice, Italy

³ Ivey Business School, Western University, London, Canada

¹ <https://www.washingtonpost.com/business/2022/11/18/ticketmaster-taylor-swift-faq/>.

² <https://www.cbc.ca/news/entertainment/taylor-swift-ticketmaster-responsibility-1.6667244>.

³ <https://business.ticketmaster.com/business-solutions/taylor-swift-the-eras-tour-onsale-explained/>.

⁴ <https://www.washingtonpost.com/music/2022/08/03/bruce-springsteen-tickets-dynamic-pricing/>.

⁵ <https://globalnews.ca/news/9053769/alan-cross-defence-ticketmaster-dynamic-pricing/>.

⁶ https://help.ticketmaster.ca/s/article/How-are-ticket-prices-and-fees-determined?language=en_US.



2017–2018 season, alone generated over \$100 M in total ticket sales,⁷ while the mega-blockbuster Broadway musical *Hamilton* generated over \$160 M in total revenue in 2018, in a single venue seating only 1319.⁸ It should be noted though, that the two examples do not reflect industry averages but rather the upper right tail of the revenue distribution. In fact, many sport and live entertainment venues face much tighter finances and often rely on public funding and private donations.

However, regardless of the financial prospects, given the natural attributes of sports, live entertainment, and arts, they all provide immediate and promising applications of revenue management (RM). First of all, they all exhibit several important RM features, such as a fixed supply of perishable inventory/capacity, high fixed cost, demand uncertainty, and customer valuation heterogeneity. There are a couple of fundamental differences though to the traditional RM industries like airline, hospitality, and car rental. For one, group dynamics is vastly more important in sports and live entertainment. Sale of single seats is rare as most individuals attend these type of events as part of a group. Thus, forecasting and capacity management become more complex and statistically convoluted. Second, for some customers of a team or show, i.e., fans, there is no strong substitute for their desired event. Unlike in, say, the airline industry where a given route not only has several competing flights, but customers also have strong substitute options such as driving, or taking a bus or train, for a given game/concert/show there are only two options: buy the ticket (and enjoy the live experience) or don't buy (and perhaps settle for a weak substitute, such as purchasing later a recording of the show, if available). Consequently, the market forces dictating demand are different. Third, in sports and live entertainment the physical layout of the venue enables intrinsic value differences and thus results in natural “fences”, as opposed to the traditional RM industries which have to construct virtual “fences” to separate customers based on budget or willingness-to-pay. These intrinsic value differences between seat locations have been leveraged through pricing-based RM applications such as variable and dynamic pricing; for applications and overview within professional sports, see Arslan et al. (2022), McTaggart (2012), Veeraraghavan and Vaidyanathan (2012), and Huefner (2017). Within live entertainment, the colloquial term “scaling the house” is used to describe how seats are priced differently based on location, e.g. seats front and center are more expensive compared to seats at the back and sides (Phumchusri and Swann 2014).

On the other hand, beyond pricing, rather surprisingly there has been very little RM development within sports and live entertainment. In particular, the literature on quantity-based Revenue Management appears to be scarce. This is despite the tremendous technology advancement enabling automated online and mobile ticket sales, which provides practical levers for capacity control, and the established value delivered in the traditional RM industries. For example, extant studies suggest that the implementation of RM techniques can improve revenues substantially, with increases from 3 to 9% in a variety of industries: hotels (Abrate et al. 2019; Metters et al. 2008; Pekgün et al. 2013), airlines (Cross 1997; Skugge 2004), cruise lines (Beck et al. 2021), retirement housing (Kuyumcu et al. 2018), manufacturing (Hintsches et al. 2010; Zatta & Kolisch 2014), and ski resorts (Malasevska et al. 2020).

Content of the special issue

The purpose of this special issue is to stimulate, advance and broaden the theoretical, empirical, and case study analysis of Revenue Management within sports, live entertainment and arts. We considered arts more broadly to include visual and auditory exhibitions, and not just limited to the performing arts. We hope that the publication of this special issue will provide further impetus for new business-solutions regarding pricing, forecasting, and capacity management in these historically non-traditional domains.

The special issue consists of four interesting, engaging, and diverse articles. In the first article, *Airline revenue management around sporting mega-events: an application using data from the Super Bowl XLIX*, the authors present an empirical analysis of the demand shocks created by regional sports team success in advancing through elimination style conferences. Using a case-based analysis of the 2015 American football championship Super Bowl, the authors quantify the impact on air fare and bookings due to the resolved uncertainty of regional teams that progress or fail to progress during the playoff.

The second article, *Pricing practices of football and basketball clubs in Italy*, provides a survey-based analysis on the prevalence of revenue management and pricing strategies in the top professional basketball and football leagues in Italy. While the authors find a general positive sentiment regarding RM, there are differences between the two leagues in the adoption of more sophisticated pricing. Overall, the football league teams are much more susceptible to various forms of variable pricing and RM, while the basketball league teams still rely heavily on fixed pricing strategies.

In the third article, *Revenue Implications of Celebrities on Broadway Theater*, the authors present an empirical analysis regarding the revenue impact of casting various celebrities,

⁷ <https://www.statista.com/statistics/764241/nhl-gate-receipts-ticketing-revenue-by-team/>.

⁸ <https://www.broadwayworld.com/grossesshow.cfm?show=HAMILTON&year=2018>.



including those that may not necessarily have talent or experience in live theatre and musical performance. Utilizing the Internet Movie Data Base's (IMDB.com) proprietary *STARMeter* metric to define celebrities, they conduct a fixed effect regression analysis on weekly revenue by controlling for weeks with and without a celebrity in the cast. The authors find that casting a celebrity results in an average weekly revenue boost on the order of \$250,000.

Finally, the fourth article, *The Future of Sports Ticketing: Technologies, Data, and New Strategies*, provides an overview of the primary and secondary sports ticket markets, and a discussion of how the evolving technologies may enable sports teams and venues to utilize and leverage different pricing strategies. In addition, the authors highlight some open and promising research areas.

In addition to the four articles, this special issue also includes a review of a timely book, *Sales and Revenue Generation in Sport Business* by Shonk and Weiner (published by Human Kinetics, 2021).

We hope that you will find the articles in this special issue interesting, stimulating, and a source of inspiration for engaging in both empirical and theoretical RM research in the area of sports, live entertainment, and the arts.

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Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

