

Effects of Streaming Services on the Film Industry: Evidence from Undergraduate Economics students in Puerto Rico

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I. Introduction

The number of streaming services in the market has increased in the past few years. Platforms like Disney+ (Walt Disney Company), HBO Max (WarnerMedia), and Apple TV (Apple) were introduced to the market to capitalize on Netflix's ongoing financial success. Film production companies have become aware of the financial benefits that these platforms bring to them as they are a direct source of revenue that, unlike traditional films, does not have to be shared with distributors, theater owners, cast, and crew.

Film production companies, after entering the streaming market, must decide which of the films they produce will be released on their streaming service and which ones will have a theatrical release. This creates two very lucrative but distinct revenue streams for the company, making the business venture more likely to succeed. Film production companies will want to create new content for their streaming services but will not want to sacrifice the potential billion-dollar revenue from a theater release¹.

Theater release movies generate revenue by selling tickets, whereas streaming service content generates revenue by increasing or maintaining subscriptions to the streaming service. The dollar amount of movie tickets sold is known as the "box office".

A subscription to a streaming service includes access to most, if not all, of the company's film and television library that can be accessed at any given moment. Subscription prices for these streaming services vary by platform and by "package." The differences between "packages" are not necessarily related to the amount of content that can be accessed on the platform. Instead, differences reside mostly in the number of screens that can be used at the same time, and other non-content features. The most basic "packages" range from \$0 to \$5.99 a month for companies that offer a version of the service with ads, and from \$4.99 to \$14.99 a month for the ones that do not offer an ad version of the platform. On the other hand, the price for movie tickets in Puerto Rico lie between \$4.50 to \$15.00 (Caribbean Cinemas), and it fluctuates based on the location of the theater, the age of the customer, and the features the theater may have like IMAX, 4DX and CXC screens, amongst other factors.

¹ For examples of box office revenues see IMDbPro (2021).

As streaming services may be close substitutes to theater release movies, when a company decides to create both types of content at the same time, it is increasing the amount of content in the market waiting to be consumed, which leads to a more competitive market (Binkyte and Christensen, 2016). On the other hand, the number of moviegoers has been somewhat steadily decreasing since 2002 (Domestic Movie Theatrical Market Summary 1995 to 2021). This leads to the question: is it best for a company to make more movies for theatrical release or more streaming content?

II. Literature Review

In the present film industry, companies choose between distributing a movie in theaters or streaming services. Films are treated as individual projects in the company's books. Companies determine how many films to produce based on experience, market analysis, and guesses. Because of the two distinct distribution strategies, "there has been a massive increase in demand for films that have caused an overload in supply" (Binkyte & Christensen, 2016). Vas & Binkyte (2018) contend that "in the film industry, there is no explicit strategy to ensure the success of a film [...]." Nevertheless, according to Binkyte & Christensen (2016), the distribution strategy is one of the most important factors in determining a film's success. The US film industry, unlike other film industries in the world, views filmmaking from an industrial angle instead of an artistic one (Vas & Binkyte, 2018). Because of this, this study will look at filmmaking as a product that is carefully crafted to maximize profitability.

Making a movie consists of three stages: production, distribution, and exhibition. According to Vas & Binkyte (2018), the "latter two are strongly interlinked as it is the distributor, who is responsible for ensuring the film's availability for exhibition as broadly as considered necessary." On the other hand, streaming services are categorized as an over-the-top (OTT) service. An OTT service is a service that "deliver[s] audio, video and other media over the internet and bypass[es] the traditional operator's network" (Sujata et al., 2015). This type of service is "[...] substituting traditional telecommunications and audiovisual service like video on demand and television or broadcasting services" (Kohli, 2020). This becomes problematic, as "OTT players offer services that are close substitute to their own offerings [...]" (Sujata et al. 2015). Not only is the supply of content increasing, but consumer behavior indicates that annually, "Americans [...] spend more money watching movies at home than [...] the previous year" (Chao, Hegarty, & Fray, 2016). This is evidenced by the fact that the number of televisions connected to the internet and the adoption of tablets and smartphones is increasing rapidly (Chao, Hegarty, & Fray, 2016).

Even though Vas & Binkyte (2018) argue “it is extremely difficult to attach academical theories to the film industry due to its uniqueness and special characteristics”, this paper will seek to analyze the industry within the microeconomic theory of substitute goods.

Standard microeconomic theory defines cross-price elasticity of demand as “the percentage change in the quantity demanded in response to a given percentage change in the price of another good” (Perloff, 2020). Products are considered substitutes if the sign of the cross-price elasticity of demand is positive. The cross-price elasticity formula is:

$$\epsilon_{XZ} = \frac{\Delta Q_X / Q_X}{\Delta P_Z / P_Z}$$

Where ΔQ_X is the change in Q_X , quantity of product X, and ΔP_Z is the change in P_Z , price of product Z. According to Vas & Binkyte (2018), substitute products provide challenges for companies because “they can limit the potential of an industry” by increasing the number of products available for consumers which decreases the substitute's profit (Vas & Binkyte, 2018).

This study seeks to explore if theater release movies and streaming service movies are in fact substitute goods. The reasoning for arguing that these may not even be close substitutes relates to the fact that there are many differentiated characteristics that theater release movies have that streaming services do not, and vice versa. Some of the factors that put the substitutability of these goods into question are the comparability of pricing given the larger amount of content that is being consumed in streaming platforms, differentiation in the quality of consumed content, non-content related features like the social aspect of theater release movies, amongst other factors. For example, in the gaming industry, Kohli (2020) suggests that “Conventional platforms cannot compete with online video platforms in terms of choices available for content.”

Streaming services offer a wide variety of content that can be accessed multiple times during their subscription period, whereas a movie ticket will only get you a single showing of one movie. It would be easy to conclude that the customer gets more utility owning a streaming service subscription than buying a movie ticket, but this is not necessarily the case. For example, a subscription service has the tradeoff of having to pay monthly regardless of whether the consumer had the time to stream content that month. As mentioned above, there are also behavioral aspects of going out to the movies with friends and family, and/or watching movies on a large theatre screen with its accompanying sound system, among other amenities that may make it a different and more attractive experience relative to streaming content at home on a television or

device. Furthermore, as noted by Kohli (2020), the “consumption of OTT services increased while that of a traditional service declined may suggest a causal relationship, however, the two tendencies do not have to be related to one another, or could result from an unobserved third phenomenon.”

A similar example of streaming services competing with traditional distribution strategies can be seen in music streaming services and traditional offline music purchases. Lee, Choi, and Lee (2016) determined that music streaming services have a significant positive effect on offline record purchases. This indicates that the music streaming services promote offline record sales with the price and rating of the record not being significant factors when a customer decides to purchase offline records. Even though music streaming services and movie streaming services share characteristics that make both comparable, an argument can be made that the conclusion cannot be applied to the film industry. The main reason for this is because, in the film industry, a film is normally not available in both distribution strategies at the same time, unlike in the music industry, where music is distributed offline and online in the same period.

In 2020, as part of a strategy to increase subscribers, WarnerMedia decided to release *Wonder Woman 1984* in both movie theaters and through their streaming service, HBO Max for no additional cost. Subsequently, WarnerMedia decided to use this distribution strategy for all their 2021 movie slate (Insider, 2021). Similarly, other film production companies such as Paramount Global and the Walt Disney Company also released movies during this period using both distribution methods. Paramount Global released *Clifford the Big Red Dog* on Paramount+ for no extra cost, while the Walt Disney Company released five films on Disney+ but unlike WarnerMedia and Paramount Global, the Walt Disney Company charged \$30.00 to unlock the selected movie before it was accessible at no extra charge, which typically is three months after the release of a movie in theaters. This strategy seems to not have met companies' expectations as currently no company has decided to adopt this distribution strategy going forwards.

III. Methodology

To explore the relationship between streaming services and the film industry, and if theater release movies and streaming service movies are indeed close substitutes, a pilot survey was designed and administered via email to Economics students at the University of Puerto Rico-Mayagüez. The survey will include situational questions that will compare the two distribution options, theater release or streaming service. Given this research will take place during the COVID-19 pandemic, an explicit distinction will be made to ensure the respondents answer assuming pre- or post-pandemic behavior.

Objective data about possible deciding factors will also be gathered through non-situational questions. These will cover the deciding factors of watching devices and costs. Additional information on the survey can be found in Appendix I.

After the data is collected, it will be analyzed to identify whether there is evidence that the two products are indeed substitutes based on the likeliness of a consumer to consume one over the other, mainly based on price changes.

IV. Data

The following data was obtained through a questionnaire sent to all students 18 years old or older that were enrolled as Economics majors in the Economics Department at the University of Puerto Rico-Mayagüez Campus during the Spring Semester of 2022. The respondents ages were between 19 to 26 years of age. The following figures show the data collected through the survey:

Figure 1 shows the gender of the respondents.

Figure 1
Gender of Sample

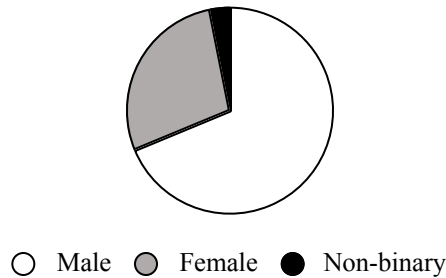


Figure 2 and Figure 3 present the monthly estimation of times the respondents attended a movie theater before COVID-19 and expected attendance after COVID-19.

Figure 2
Monthly Attendance to Movie Theater: Pre Covid

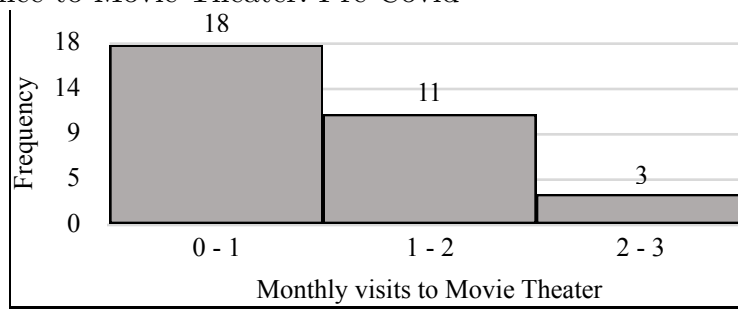


Figure 3
Expected Monthly Attendance to Movie Theater: Post Covid

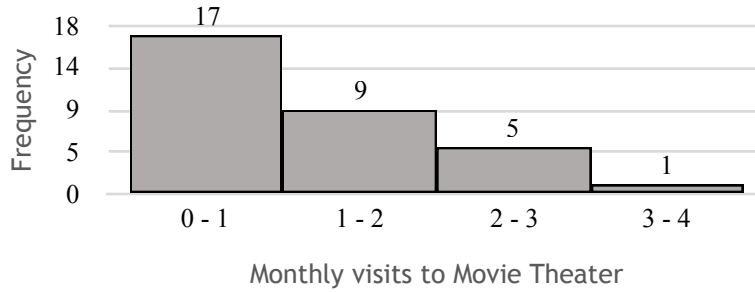
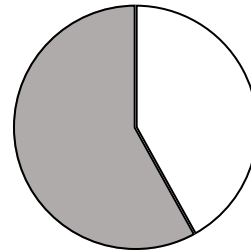


Figure 4 shows how many of the respondents have access to a movie “streaming service”, and how many of those pay for their subscription.

Figure 4
Streaming Service Accessibility



- I am not personally paying any subscription, but I have access to streaming services through a subscription paid for by a friend or family member.
- I personally pay for one or more subscription services.
- I do not currently have access to any streaming service.

Figure 5 indicates the number of respondents that own a subscription to the selected streaming services.

Figure 5
Streaming Service Subscriptions

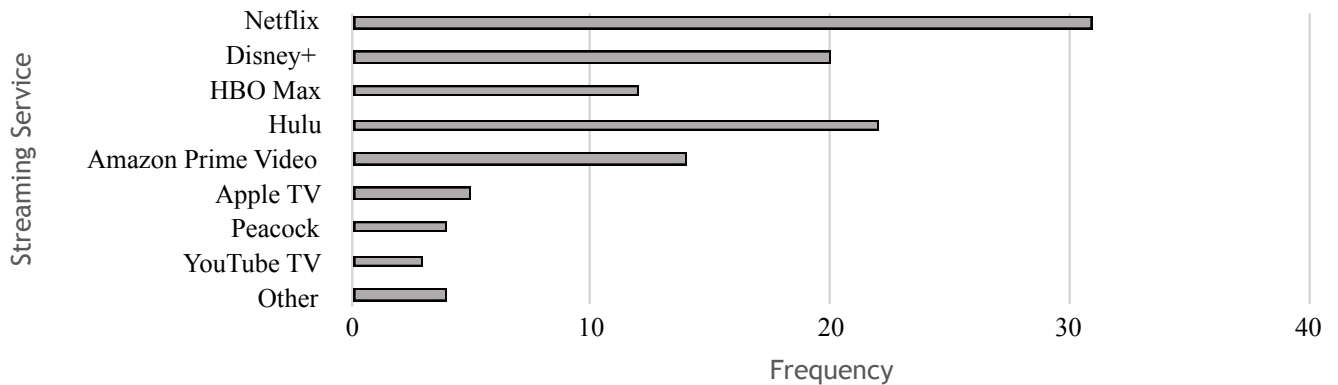


Figure 6 shows the preference of the respondents to watch movies by themselves or with friends and family.

Figure 6
Social Consumption Preference

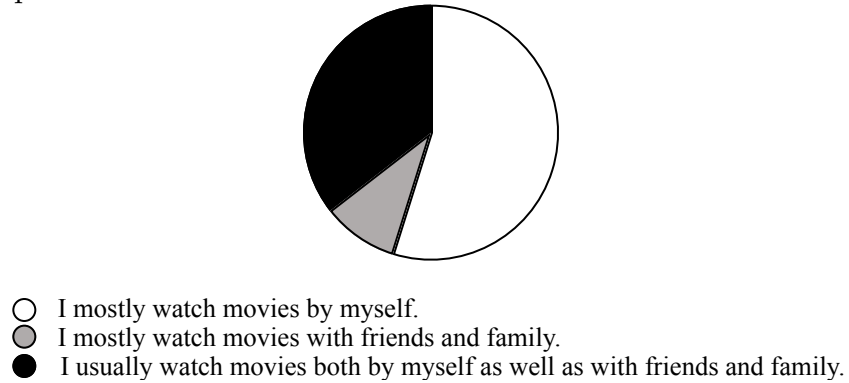
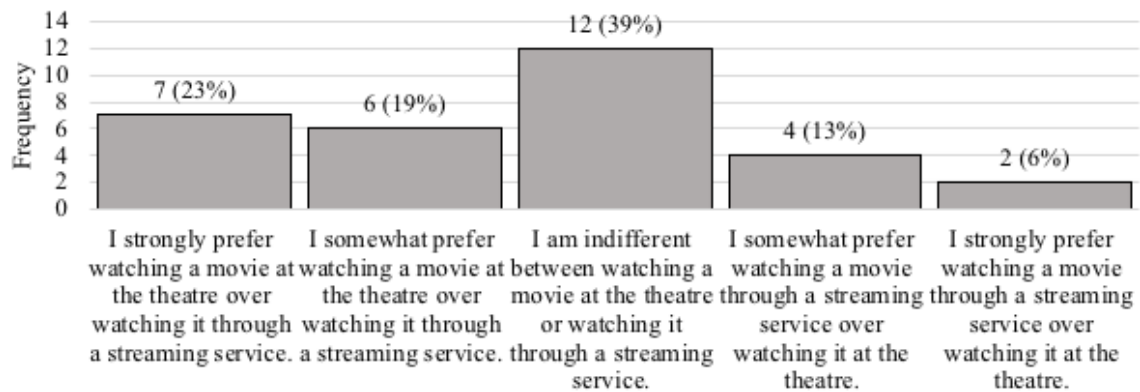


Figure 7 presents a Lickert scale that indicates the preference of respondents to consume movies on streaming services versus movie theaters.

Figure 7
Preference for Streaming Service Consumption



Figures 8 and 9 exhibit potential behavioral responses given a \$1, \$5, and \$10 change in the price of subscriptions or movie tickets.

Figure 8
Expected Consumer Behavior given Increase in Subscription Cost

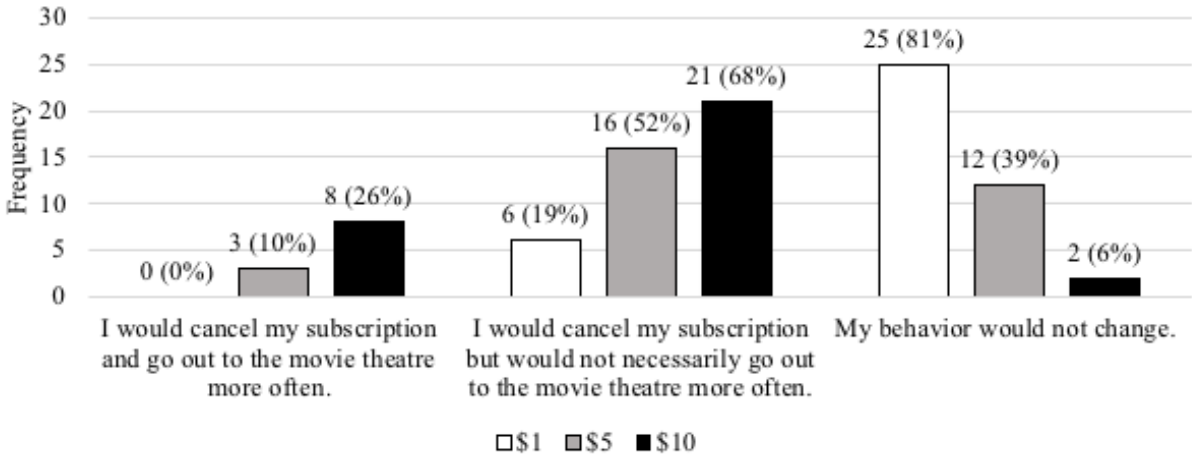


Figure 9
Expected Consumer Behavior given Increase in Movie Ticket Price

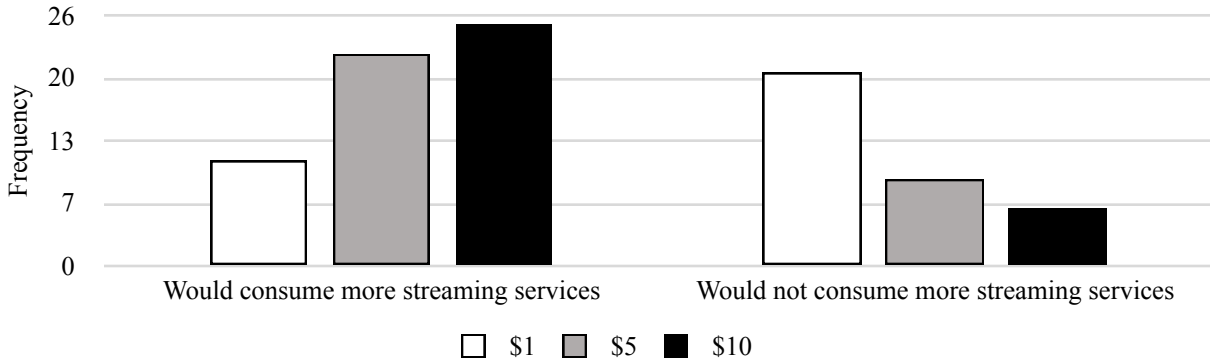


Figure 10 shows the preference of respondents to watch a movie on a streaming service or movie theater given the movie genre.

Figure 10
Consumer Preference based on Movie Genre

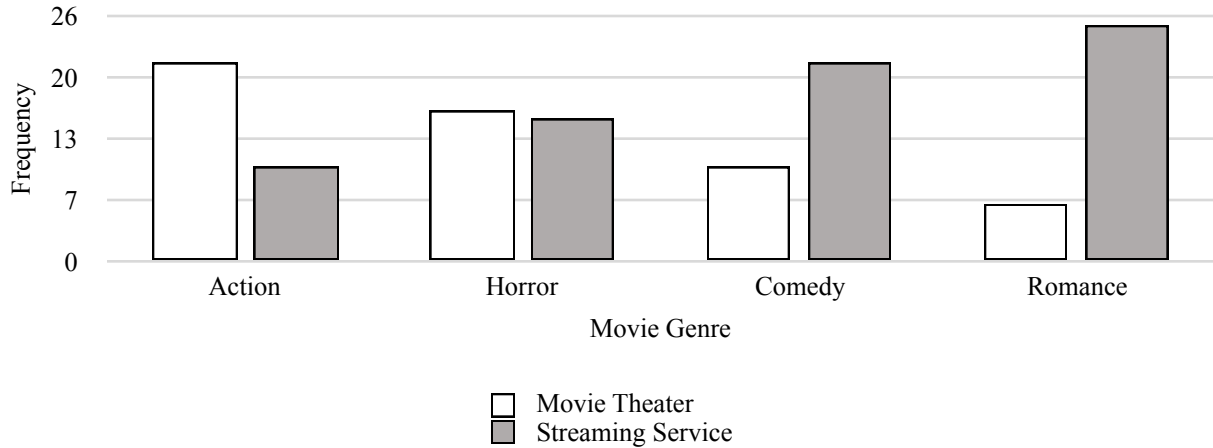


Figure 11 presents the devices respondents use to consume their streaming services.

Figure 11
Streaming Device

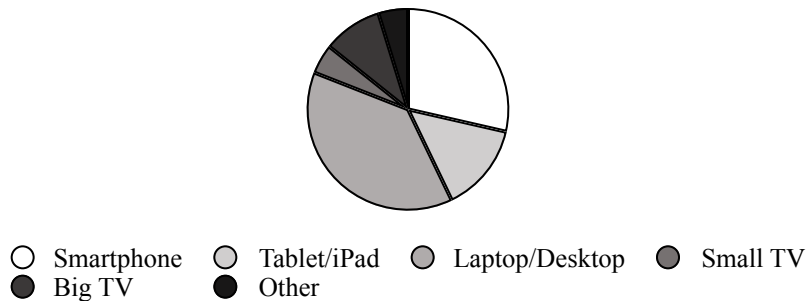


Figure 12 shows the preference of respondents to watch the same movie in a movie theater versus a streaming service given that they are accompanied by friends and family.

Figure 12
Movie Consumption Preference with Friends and Family

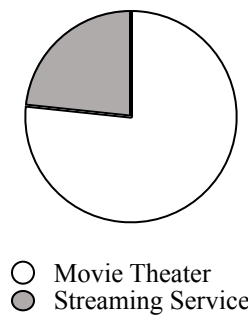
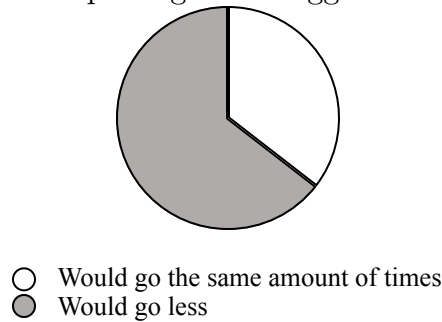


Figure 13 indicates the behavior change of respondents to consume movies distributed in a movie theater if they had a bigger screen to stream their streaming content.

Figure 13

Change in Movie Theater Consumption given a bigger Streaming Service Screen



V. Analysis

Following the cross-price elasticity of demand, two products are substitutes if a change in the price of one results in a change in the demand for the other. Figure 8 exhibits that when the streaming service cost increases by \$1, 0% of respondents would go more to the movie theater. For a \$5 increase in the streaming service cost, 10% of respondents would go more to the movie theater. Lastly, when the streaming service cost increases by \$10, just 26% of the respondents answered that they would go more to the movie theater. The data suggests that an increase in the price of streaming services does not significantly lead to an increase in the demand for going to the movie theater.

On the other hand, Figure 9 shows that when the price of a movie ticket increases by \$1, 35% of the respondents would consume more streaming content. For a \$5 increase in the price of a movie ticket, 71% of respondents would watch more streaming content. Lastly, when the price of a movie ticket increases by \$10, 81% of respondents answered that they would consume more streaming content. The data suggests that an increase in the price of a movie ticket does lead to an increase in the demand for streaming services.

These findings propose that streaming services and movie theaters are not symmetrically substitutes as there appears to be no increase in movie theater demand as a result of an increase in the price of streaming services, but there is an increase in streaming service demand as a result of an increase in the price of a movie ticket. The lack of symmetry between these two behaviors may suggest that consumers are not necessarily consistent in their behavior, as we would expect symmetry between the two products. The lack of symmetry cannot be explained by the income effect as both products are relatively equally priced. Although, this asymmetry may be explained by the amount of content that is available to be consumed on a streaming service in comparison to the amount of content consumed with one movie ticket. The consumer

will have a greater utility owning a single streaming service subscription than going once to the movie theater. Another possibility is that there is an ongoing trend towards watching movies alone. As shown in Figure 6, most respondents (55%) usually watch movies by themselves. Even though 74% of respondents prefer to watch movies with family and friends in a movie theater (Figure 12); only 10% of respondents answered they usually watch movies with friends and family. The trend towards streaming films rather than going to theatres may be reflecting that watching movies is becoming an individual activity. This may explain why price increases in streaming subscriptions were not generating greater demand for movie tickets. Whereas price increases in movie tickets would be accelerating the trend towards individual consumption via streaming. However, given the current exercise is limited to a pilot survey with a small sample of students, there is no way of determining if this possible trend exists in the general population, in Puerto Rico or elsewhere.

When considering other factors that may influence a consumer's decision to consume streaming services over movie theaters or vice versa, we find Figure 10 shows that most respondents would watch action and horror movies in a movie theater over a streaming service but for comedy and romance movies, respondents chose streaming service over a movie theater. Finally, 65% of respondents answered that they would go less to the movie theater if they had a bigger screen. This data suggests that consumers will choose to go to the movie theater over watching streaming content if they're consuming the movie with friends and family. It also suggests that consumers will choose to watch a movie in a movie theater if the movie is an action or horror movie but will choose to watch a movie using a streaming service if the movie is a comedy or romance. The last suggestion based on the data gathered is that the bigger the screen used to watch streaming service content; the less likely consumers are to go to the movie theater.

VI. Conclusion

Streaming services and movie theaters appear to show substitutability but only in one direction. The results of our pilot survey suggest people will consume more streaming services if the price of a movie ticket increases, but they will not consume more movie theater released movies if the price of streaming services increases. A variety of reasons were discussed that could explain this finding.

Other factors influence a consumer's decision between watching a movie at a movie theater or a streaming service. If a consumer watches an action or horror movie, or if the consumer is watching the movie with family and friends, they will choose the movie theater. Also, if the consumer watches streaming content on a device that has a small screen, they will choose to go to the movie theater more. On the other hand, if the

consumer is watching a comedy or a romance movie, and they are not watching with family and friends, they will choose to watch movies through a streaming service.

VII. Limitations and Future Research

Among the possible biases that this study may encounter from the data gathered through the survey, we find significant ones in the fact we are assessing potential post-pandemic behavior. Following the law of diminishing marginal utility, respondents may be biased towards going to the movie theater over staying at home consuming streaming services. On the other hand, COVID-19 may have changed consumers' preference for staying in close spaces permanently which would create a bias towards staying at home and not going to the movie theater. This may be because, during the pandemic, the consumer was informed about the ease of contracting airborne diseases in close spaces.

Another bias this study may encounter is the type of movie-going experience offered to the respondents. A factor that may influence the choice between going to a movie theater or watching streaming content is the movie-going experience. In Puerto Rico, the movie-going experience is a low-budget one when compared to other countries that may offer features not available in a Puerto Rican movie theater, such as comfortable seating, fine dining, better theater architecture, gourmet chefs, bars, beds, among others.

As a pilot study, this research is intended to be replicated with a larger and representative sample in Puerto Rico, or potentially also in a different market where movie theater conditions and experiences are of greater quality. This would also allow future researchers to explore if there is in fact a trend where younger generations are increasingly watching more movies by themselves rather than with friends and family.

Another benefit of replicating the study with a representative sample is that with the information that results from the study, film production companies could more accurately determine what product mix will maximize profits in that market. Understanding how consumers behave will give companies an edge as it will provide them with better production and forecasting data.

References

- Binkyte, G., & Christensen, M. S. (2016). *Strategic Management in Film Production*. Copenhagen Business School.
- Caribbean Cinemas. *Cinemas Express*. <https://caribbeanpay.com>.
- Chao, C., Hegarty, N., & Fray, I. (2016). Impact of Movie Streaming over Traditional DVD Movie Rental-An Empirical Study. *Journal of Industrial and Intelligent Information*, 4(2), 104-109.
- Chen, X., Chen, Y., & Weinberg, C. B. (2012). Learning about movies: the impact of movie release types on the nationwide box office. *Journal of Cultural Economics*, 37(3), 359-386.
- Cowles, E., & Nelson, E. (2019). *An introduction to Survey Research, Volume I: The basics of survey research (2 edition)*. (Stengel, E., Ed.) Business Expert Press.
- Cowles, E., & Nelson, E. (2019). *An introduction to Survey Research, Volume II: Carrying out the survey (2 edition)*. (Stengel, E., Ed.) Business Expert Press.
- Domestic Movie Theatrical Market Summary 1995 to 2021. (2021). *The Numbers*. <https://www.the-numbers.com/market/>.
- Guerrasio, J. (2021). All 17 Warner Bros. movies expected to premiere on HBO Max in 2021. *Insider*. <https://www.insider.com/warner-bros-movies-premiere-hbo-max-2021>.
- IMDbPro. (2021). *Top Lifetime Grosses*. Box Office Mojo. https://www.boxofficemojo.com/chart/top_lifetime_gross/?area=XWW.
- Kohli, C. (2020). The Replacement of Conventional Television by Streaming Services. *International Journal of Research in Engineering, Science and Management*, 3(10), 59-67.
- Lee, M., Chao, H., & Lee, H. (2016). Cannibalizing or Complementing? The Impact of Online Streaming Services on Music Record Sales. *Procedia Computer Science*, 91, 662-671.
- Mogstad Eri, M. (2017): *Marketing Strategy in an Independent Co-Production Feature Film* Copenhagen Business School, Bachelor Thesis.
- Perloff, J. (2020). *Microeconomics: Theory and applications with calculus (5 edition)*. Pearson.
- Savage, J. (2014). *The Effect of Video on Demand Services on the Cinema Industry*. Letterkenny Institute of Technology.
- Stokkendahl, R.; Marcussen, L. (2017): *The Global Product to Market Approach of: Marvel vs. DC*. Copenhagen Business School. Bachelor Thesis.
- Sujata, J., Sohag, S., Tanu, D., Chintan, D., Shubham, P., & Sumit, G. (2015). Impact of Over the Top (OTT) Services on Telecom Service Providers. *Indian Journal of Science and Technology*, 8(4), 145-160.

Vas, V., & Binkyte, G. (2018). How Are the Major Streaming Services Reshaping the Film Industry. Copenhagen Business School.