

Review Article

# Video Stream Challenges Movie Industry— an Empirical Study with a User Focus

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**Abstract** - Video stream challenges the movie industry, especially during the outbreak of coronavirus around the globe in 2020, as movie theatres, opera houses, and other entertainment gatherings are closed. Video stream possesses convincing advantages over other ways of seeing movies. Thanks to global technology advancement, consumers are able to watch high-definition movies at home or on the go. This study focuses on consumers' preferences between video streaming and other ways of seeing movies. The results indicate that consumers are shifting from going to the movie theatres, watching a movie on-demand, or movie rental to video stream, while the home entertainment industry continues to improve both in technology and customer service. Consumers favour video streaming with the availability of WIFI and 5Gis on the horizon.

**Keywords** - Video stream, movie stream, Watch movie on demand, Movie rental.

## I. INTRODUCTION

The competition for viewers in the movie industry takes many different forms. Traditional movie theatres, with high-quality pictures on large screens and high-quality sound effects, need the patrons to show up physically; physical movie rental stores of cassettes and DVDs are the things of the past. The worldwide market for DVD and BD-DVD Player is expected to grow at a CAGR of roughly **-29.2%** over the next five years will reach \$80 million in 2024, from \$630 million in 2019 (Market Watch, 2020). Video stream via high-speed internet connections, which is emerging as a new way for the moviegoers, enables consumers to watch movies without going to movie theatres, nor going to rental stores, nor waiting for DVD disks (including Blue Ray DVD) to show up in the mailboxes, nor returning these disks to rental stores (Wingfield, 2010; Stone, 2010). While these video websites, which provide the convenience for the customers to watch high-quality movies on TVs or on electric gadgets (the most popular ones are smartphones), witness tremendous growth. The outbreak of coronavirus around the globe in 2020 temporarily shut down most of the movie theatres around the world. The new coronavirus

pandemic is deepening a digital divide, amplifying gains for businesses that cater to customers online while businesses reliant on more traditional models fight for survival (Torry, 2020). A few movie theatres in my neighbourhood have substantially reduced the number of seats and converted the old fashion seats to recliner seats due to the decrease in moviegoers.

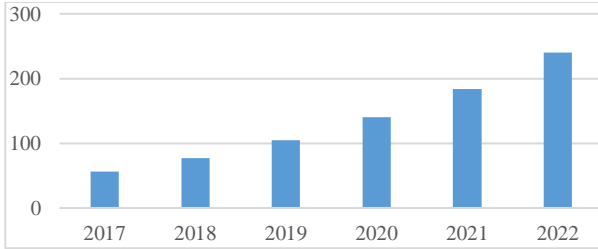
This emerging phenomenon of video stream depends heavily on the technological advancement in computers, networking, and most of all, the speed and capacity of the internet. The global monthly video internet traffic in 2019 reached 105 exabytes per month, an amazing 83 fold of the video traffic volume in 2008, about an equivalent of about 300 million DVDs crossing the network each month (Cisco VNI, 2014, 2018, 2020).

What impacts this shift will have on businesses and consumers are of great interest. This study aims to explore only some of the impacts of the emerging video stream in-home entertainment industry from the consumer point of view.

## II. REVIEW OF LITERATURE

Video consumption and distribution have witnessed double-digit growth in the past few years; converting and preparing this content for the digital realm was largely a 'black art' until recently when several enterprise-grade solutions came onto the market. The trends of on-demand viewing and high-definition video are generating very rapid growth in cable video and IPTV traffic transported over IP in metropolitan areas (Cisco, 2018, 2020). Figure 1 presents the monthly internet video traffic trend between 2017 and 2022.



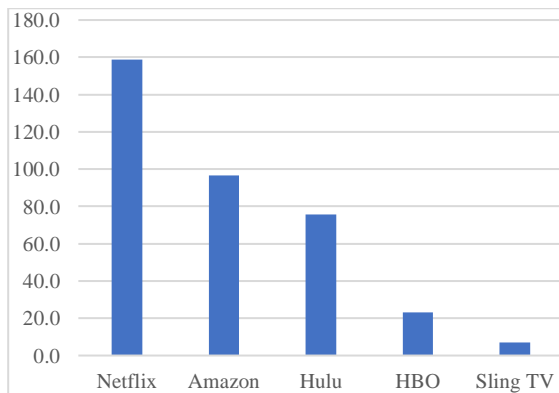


**Fig. 1 Monthly Internet Video Traffic Trend Vs Total IP Traffic, in Exabytes/Month**

Source: Cisco VNI, 2018.

<https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-741490.html>

The top five providers for video streaming include Netflix, Amazon, Hulu, HBO, and Sling TV. Netflix tops the viewership as it counts for 158 million and has about 44 percent of the market share. Fig 2 shows the viewership among the big video stream providers in 2019 in the U.S.



**Fig. 2 Viewership Among the Major Video Stream Providers, 2019, in Mil.**

Source: Statista, 2019. <https://www.statista.com/statistics/1046737/ott-video-viewers-us-by-provider/>

While the traditional movie rental giants, Blockbuster, Movie Gallery, and Hollywood were able to generate billions of dollars in revenues in the past, they vanished. Netflix has 158 million streaming customers, as it lets its customers pay only \$7.99-9.99 a month to watch unlimited movies.

Netflix provides its consumers with three primary monthly pricing plans, as follows: Basic, \$8.99 per month (up from \$7.99 in 2018). Netflix's basic plan doesn't provide high-definition viewing, and its programs can only be watched on one screen at a time. Standard, \$12.99 per month (up from \$10.99 in 2018). The Netflix standard offers HD videos and allows for two simultaneous viewings. Premium, \$15.99 per month (up from \$13.99 in 2018). Netflix has formed partnerships with wireless companies and cable companies, which would seem to be competitors. For example, T-Mobile gives Netflix subscriptions to some of its customers for no extra cost, while Comcast gives its customers a convenient way to buy a Netflix subscription.

The top-tier offering includes the ability to watch four screens at the same time. It's also the only item on Netflix that offers a 4K viewing option. Amazon Prime Video, which starts at \$12.99 a month, has been Netflix's main rival until nearly every major content provider made the plunge into streaming. In addition, some newcomers have joined the competition; Disney offers Disney+ came to market in November 2019, with its wide-ranging Disney content (including Pixar, Marvel, and Star Wars franchises) for \$6.99 per month or a combined Disney+, ESPN, and Hulu subscription price of \$12.99. This is competitive with Netflix's three plans, which range from \$8.99 to \$15.99 per month. Apple TV+ was also launched in November 2019 at an introductory \$4.99 monthly rate. (<https://www.fool.com>, 2020).

With numerous online video platforms on the market, choosing a solution has become more difficult. Some offerings focus on content management and monetization, while others are geared towards enabling syndication and interactive advertising campaigns for an entire industry that defines itself based on the word "quality", which can be 4K or even 8K.

This study intends to examine a limited number of the users' preferences, hopefully, to provide some managerial insights for the home entertainment industry: what consumers prefer and how they make video stream decisions with a focus on the core issues of price and promotion quality and delivery.

### III. METHOD

With the focal questions in mind, this research studied the consumers' preferences with regards to how they stream movies. A survey was developed to investigate the consumer preferences on products and their quality, price and promotion, deliveries, together with other features available using either movie stream. The following variables were based on literature reviews.

#### A. Variable Selection

The following variable selections affect how and where consumers make their purchase decisions. These are incorporated into a survey questionnaire.

- Easy to obtain movies
- Offers lower price
- Easy to watch
- High-quality pictures
- Easy on the go
- High sound quality
- Easily share with friends
- Do not need to buy special gadgets
- Free for delivery
- Work on a variety of formats
- Are copyright protected

## B. Hypotheses

The hypotheses for this research are to find if there are significant differences between movie stream and seeing a movie in traditional ways (in movie theatres, DVDs, etc.). The hypotheses for this study state:

- H<sub>1</sub> There is no significant difference in obtaining movies between movie streams and seeing a movie in traditional ways (in movie theatres, DVDs, etc.).
- H<sub>2</sub> There is no significant difference in attractive prices between movie stream and seeing a movie in traditional ways (in movie theatres, DVDs, etc.).
- H<sub>3</sub> There is no significant difference in the easiness of watching movies between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>4</sub> There is no significant difference in high definition movies between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>5</sub> There is no significant difference in easiness for watching movies on the go-between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>6</sub> There is no significant difference in high sound quality between movie stream and seeing a movie in traditional ways (in movie theatres, DVDs, etc.).
- H<sub>7</sub> There is no significant difference in easiness for sharing movies with others between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>8</sub> There is no significant difference in requirements for buying additional special gadgets or instruments between movie streams and seeing movies in traditional ways (in movie theatres, DVDs, etc.).
- H<sub>9</sub> There is no significant difference in easiness and not cost for movie delivery between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>10</sub> There is no significant difference in movie formats that can be played on any instrument between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).
- H<sub>11</sub> There is no significant difference in concerning of movie copyrights between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.).

The alternative hypotheses stated: there are significant differences in this variable between movie streaming and Seeing movie in traditional ways (in movie theatres, DVD, etc.).

## C. Survey and Tests of Hypotheses

Due to the nature of this empirical study, the questionnaires were distributed to respondents at a large university in the northeast of the US for a convenient sampling since these respondents tend to browse on the websites and stream movies and see movies in traditional ways. The respondents were asked to evaluate the selected variables using a five-point Likert scale, with 5=strongly somewhat prefer, 4=prefer, 3=neutral, 2=somewhat not prefer, and 1=least prefer.

When two samples are involved, and the values for each sample are collected from the same individuals (that is, each individual gives two values, one for each of the two categories), or the samples come from matched pairs of individuals, the Wilcoxon Signed-Rank Test can be used to test hypotheses. This test is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess whether their population means ranks differ (i.e., it is a paired difference test). It can be used as an alternative to the paired Student's *t*-test, *t*-test for matched pairs, or the *t*-test for dependent samples when the population cannot be assumed to be normally distributed. The Wilcoxon test assumes

- Data are paired and come from the same population;
- Each pair is chosen randomly and independent; and
- The data are measured on an interval scale (ordinal is not sufficient because differences are recorded) but need not be normal.

The nulls should be rejected if the significance level is less than or equal to five percent in these criteria. In other words, five percent of the paired sample Wilcoxon test two-tailed probability level signifies the preferences for movie stream vs traditional ways of seeing movies (Conover, 1980; Davis and Cosenza, Hamburg, 1977; 1985; SPSS<sup>x</sup>, 2002; Wikipedia).

## IV. RESULTS

612 consumers were distributed, with 272 completed and usable responses for analysis that represents 44.4 percent of the total surveyed.

### A. Backgrounds of the Respondents

Table 1 presents the general information of the respondents.

**Table 1. Backgrounds of the Respondents**

Variables	%
Your age	
<18	1.2
18-35	97.1
36-55	1.5
>55	0.3
Your gender	
Male	55.8
female	44.2
Your annual family income	
<\$30k	22.8
\$30-50k	17.3
\$50-75k	26.0
>\$75k	33.9
Your highest education	
high school	13.8
college	75.3
graduate	10.9
Your present marital status	
married	24.3
single	75.7

Source: original.

**B. Movie Experience**

Table 2 below presents the respondents' pattern of seeing the movie. The study indicates that nearly all respondents have access to their movie watching.

**Table 2. The respondents' movie experience.**

Have you ever streamed a movie?	%
Yes	89.2
No	10.8
Do you have any special gadget(s) that let you watch a movie, i.e., phone, tablets, etc.?	
Yes	45.0
No	55.0
How many times do you go to the movie theatre monthly?	
0	7.3
1	45.0
2	30.7
3	9.4
>=3	7.6
How many movies do you watch on TV, PC, tablets, phones, or others?	
0	1.5
1	38.0
2	26.0
3	12.3
>=3	22.2

**Table 3. The Respondents' Movie Preferences.**

How do you prefer seeing a movie in movie theatres?	%
least prefer	6.1
somewhat not prefer	8.2
neutral	40.6
somewhat prefer	31.3
most prefer	13.7
How do you prefer watching on-demand movies provided from cable or FiOS on TV and/or others?	%
least prefer	4.4
somewhat not prefer	5.8
neutral	36.3
somewhat prefer	38.3

most prefer	15.2
How do you prefer watching purchased DVD or Blu-ray disks on TV?	%
least prefer	5.3
somewhat not prefer	10.8
Neutral	32.2
somewhat prefer	31.3
most prefer	20.5
How do you prefer watching a movie on a rental basis?	%
least prefer	8.2
somewhat not prefer	10.8
neutral	39.8
somewhat prefer	32.7
most prefer	8.5
How do you prefer watching low definition movies streamed?	%
least prefer	16.4
somewhat not prefer	17.3
neutral	39.3
somewhat prefer	19.4
most prefer	7.6
How do you prefer watching high-definition movies streamed?	%
least prefer	9.1
somewhat not prefer	15.5
neutral	33.6
somewhat prefer	26.3
most prefer	15.5
How do you prefer watching streaming movies on a gadget screen less than 7 inches, i.e., smartphones	
least prefer	17.0
somewhat not prefer	21.9
neutral	44.2
somewhat prefer	12.6
most prefer	4.4
How do you prefer watching streaming movies on a gadget screen more than 10 inches?	%
least prefer	5.6
somewhat not prefer	7.6
Neutral	37.1
somewhat prefer	33.9
most prefer	15.8

**C. Results of Wilcoxon Signed Ranks Test and Significance**

Table 4 presents the paired samples t-Test results with paired mean differences, standard deviations, t values, degrees of freedoms, the significance levels.

**Table 4. Wilcoxon Signed Ranks Test and Significance**

Variables	Mean diff.	Z	Sig. (2-tailed)
<b>1. Easy to obtain movies</b>	65.5	<b>-4.666</b>	<b>0.000</b>
<b>2. Offers lower price</b>	103.1	<b>-7.384</b>	<b>0.000</b>
<b>3. Easy to watch</b>	-46.8	<b>-3.238</b>	<b>0.001</b>
4. High quality pictures	-17.3	-1.408	0.159
<b>5. Easy on the go</b>	120.1	<b>-7.955</b>	<b>0.000</b>
<b>6. High sound quality</b>	-37.7	<b>-2.463</b>	<b>0.014</b>
<b>7. Easily share with friends</b>	57.2	<b>-3.991</b>	<b>0.000</b>
<b>8. Do not need to buy special gadgets</b>	43.8	<b>-3.083</b>	<b>0.002</b>
<b>9. Free for delivery</b>	66.2	<b>-4.475</b>	<b>0.000</b>
<b>10. Work on a variety of formats</b>	74.7	<b>-5.713</b>	<b>0.000</b>
11. Are copyright protected	-14.5	-1.267	0.205

Source: original. Variables in bold indicate significance levels ≤5%.

The Wilcoxon Test results reject nine of the null hypotheses; therefore, the study concludes that there are statistically significant differences from the consumers' viewpoints between movie stream and seeing a movie in traditional ways (in movie theatres, DVD, etc.) when the significance levels are less than 5% in the ten out of the total eleven variables. These variables are **1. Easy to obtain movies, 2. Offers lower price, 3. Easy to watch, 5. Easy on the go, 6. High sound quality, 7. Easily share with friends, 8. Do not need to buy special gadgets, 9. Free for delivery, and 10. Work on a variety of formats**

No statistically significant difference is found in the two variables: **4. High-quality pictures and 11. Is copyright protected?**

The test results also indicate that in seven out of eleven variables with the respondents' higher preference, the mean differences are positive: **1. Easy to obtain movies, 2. Offers lower price, 5. Easy on the go, 7. Easily share with friends, 8. Do not need to buy special gadgets, 9. Free for delivery, and 10. Work on a variety of formats.** While four out of eleven variables, the respondents give higher mean values: **3. Easy to watch, 4. High-quality pictures, 6. High sound quality, and 11. Are copyright protected**

## V. MANAGERIAL IMPLICATIONS AND RECOMMENDATIONS

Movie stream presents tremendous growth and can result in a substantial reduction in delivery and handling costs, enabling the providers to better control the movie products. Meanwhile, online video advertisement spending has increased from \$10.9 million in 2007 to a predicted \$1.5 billion in 2012, for a compound annual growth rate of 167.8% (Marketingcharts, 2012). The movie industry needs to take advantage of this growth and prepare for its own future growth. Intel recently announced that it would join others, such as Apple Inc., Microsoft Corp., Google Inc., and many movie studios, to offer a selection of live and on-demand TV programming (Clark, 2013). This will make the movie and TV streaming better compete with other ways of viewing movies; ultimately, consumers will be benefited.

As the authors are working on this research, the world's largest movie-theatre chain, AMC, said a few days ago it was closing all its theatres—more than 1,000 around the world—for up to 12 weeks in response to the spread of the coronavirus. But with the U.S. surpassing 200,000 confirmed coronavirus cases, the closure is likely to last longer, according to industry analysts (Gladstone & Schwartzel, 2020). To survive this outbreak of coronavirus, the movie industry needs to do some strategic shifts. First, the industry may consider offering the new releases via the internet, i.e., Disney's Mulan, etc.; second, the industry may consider offering the viewers movies on demand; third, the industry may consider teaming up with certain movie stream

providers and enable the subscriber's stream these movies. This is very challenging as far as movie industry survivability is concerned.

### A. Limitations and Future Research

This research, as it surveyed only a small sample, mostly college students, it has several limitations. First, technology advancement will enable movie stream more feasible; as the capability of the Internet will be expanded, and the computers and networks will be greatly enhanced, the time required for streaming a high definition movie will be greatly reduced. However, this may take some years.

Second, the sample size is small, and the representation of respondents is narrow. Cautions must be made when one tries to generalize the outcome of the research. Consumers from other segments, rather than college students, may present different views about obtaining movies in different ways.

Third, although the key issues of product, price, promotions, and delivery are discussed, they mainly focus on the limited number of big players in the marketplace, i.e., Netflix, Amazon, Hulu, Google's YouTube, and Apple, many small players are left out, i.e., iFun, Tudou, etc., not to speak of numerous small and emerged movie stream providers in the emerging markets.

Despite these limitations, as investigators, we believe this study may throw some light for more in-depth and broader future studies.

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