MSBA 324 Final Project

Case study on Hulu

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Hulu Overview

Background

Fourth largest streaming service

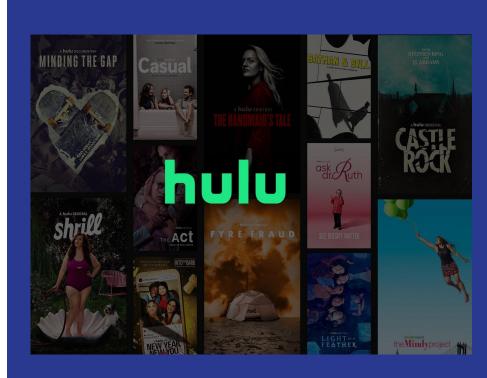
Pricing Model

• Hulu: \$5.99/ month

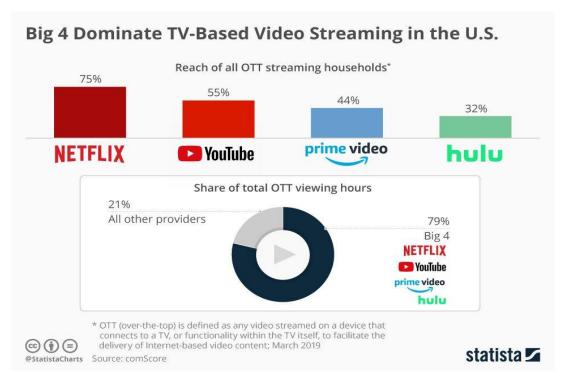
• Hulu + Live TV: \$44.99/ month

Competitors

- Netflix
- Disney +
- Amazon Prime Video



Video Streaming Service



Netflix is the most popular service of choice, reaching 75 percent of all OTT households, ahead of YouTube (55 percent), Amazon Prime Video (44 percent) and Hulu (32 percent). These four streaming services account for 79 percent of all OTT streaming in the United States.

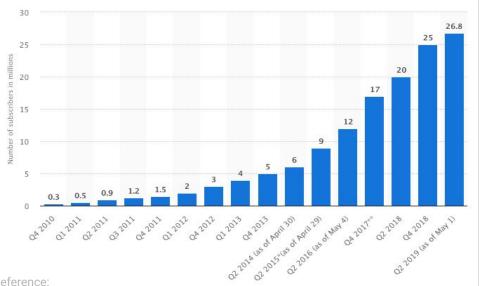
Reference:

Richter, F. (2019, July 9). Big 4 Dominate TV-Based Video Streaming in the U.S., Retrieved November 24, 2019, from https://www.statista.com/chart/10585/ott-video-streaming/.

Subscriber Trend of Hulu

Number of Hulu's paying subscribers in the United States from 4th quarter 2010 to





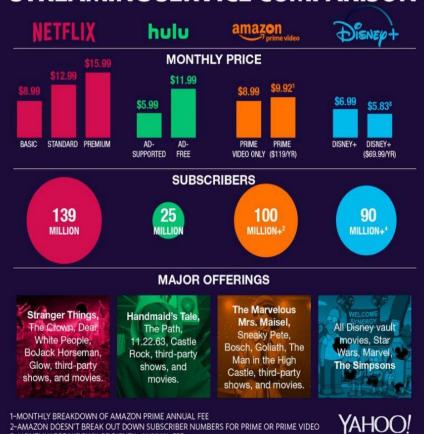
Hulu's Subscriber Trend shows a steady growth over time based on the chart. Disney, a major stakeholder in Hulu, projects that by fiscal 2024, Hulu will have 40 to 60 million subscribers. (Jasinski, 2019.)

Reference:

Jasinski, N. (2019, May 6). Disney's Streaming Plan Shows It's on the Right Track, Analyst Says. Retrieved November 26, 201 https://www.barrons.com/articles/disnev-streaming-plan-outlook-analyst-51557161298

Watson, A. (2019, September 12). Number of Hulu's paying subscribers in the United States from 4th quarter 2010 to 2rd quarter 2019 (in millions), Retrieved November 25, 2019, from https://www.statista.com/statistics/258014/number-of-hulus-paying-subscribers/.

STREAMING SERVICE COMPARISON



4-SUBSCRIBERS ESTIMATED 60 MILLION TO 90 MILLION BY 2024

Pricing:

 Hulu is the least expensive of the compared options

Major shows and movies:

 Hulu's original content is not as strong as Netflix's or Amazon's

Audience size:

 Hulu's subscriber base is far smaller than Netflix's

Reference:

FINANCE

Howley, D. (2019, April 13). How Disney + compares to Netflix, Amazon Prime Video and Hulu, Retrieved November 25, 2019, from https://finance.yahoo.com/news/disney-netflix-amazon-hulu-110653607.html.

Problem Statement

Problem Identification

Low Number of Paid Subscribers

 Many top competitors like Amazon Prime, Netflix and now Disney +

Lack of Profit

 "Hulu lost as much as \$440 million during the third quarter of 2018, more than double a loss of \$207 million a year earlier and up from a loss of \$357 million in Q2." (Spangler, 2019).

Success Criteria

Short Term:

 Identify Causes of Low Numbers and Potential Profit Prospects

Long Term:

 Increase number of subscribers by another 7% by the end of 2019 Q4

References:

Model Selection

Twitter Sentiment Analysis

- Dataset: Retrieved from Twitter
- Software used: R
- Reason why choosing this model: We want to analyze how Twitter users react to Hulu content and streaming services.
 Subsequently, we can also compare it with how Twitter users discuss and react to Netflix content and streaming services.

Survey Analysis

- Dataset: Survey (Google Forms)
- 15 questions & 71 responses
- Reason why choosing this model: We want to know what age groups are looking for and willing to pay, and at the same time consider how much time is being spent on streaming services.

Solution Process



Software: Twitter Sentiment Analysis (R)

- Setting up API access to Twitter data
- Installing required packages in R
 & loading libraries
- Setting up Twitter authorization in R

```
# Load
library(twitteR)
library(tm)
## Loading required package: NLP
library(ggplot2)
## Attaching package: 'ggplot2'
## The following object is masked from 'package:NLP':
##
       annotate
library(wordcloud)
## Loading required package: RColorBrewer
library(RColorBrewer)
consumer_key <-"UdPtPsKWAjtMrjTb7zp1ruaKb"</pre>
consumer_secret <-"comRZsbKBxDZ0WJAGc4JYVqv0oUisIKEFxIcpLe3LSa8V4SMz0"
access_token <-"216996229-qmeSx4aUSvFMsRqzG3LvTWbY8LmV8xGQJDp1u1DR"
access_secret <-"jLbHBS74qZmY0B7svLDAIdplqcGGKxL7SqcxkQqtkYrMw"</pre>
setup_twitter_oauth(consumer_key, consumer_secret, access_token, access_secret)
```

Software: Twitter Sentiment Analysis (R)

Extracting Hulu's data from Twitter & building a corpus

```
tw = twitteR::searchTwitter('@hulu', n=1e4, lang="en", retryOnRateLimit = 1e3 )
d = twitteR::twListToDF(tw) # Transform tweets to dataframe
d
```

```
original_data <- twitteR::twListToDF(tw)

#Build a corpus

myCorpus<-Corpus(VectorSource(d$text))

myCorpus</pre>
```

Software: Twitter Sentiment Analysis (R)

Cleaning and preprocessing text data using tm package

```
# using tm to remove unwanted data
myCorpus1<-tm_map(myCorpus, stripWhitespace) # Removing extra white-spaces
## Warning in tm_map.SimpleCorpus(myCorpus, stripWhitespace): transformation
## drops documents
myCorpus2<-tm_map(myCorpus1,tolower) # converting text to lower case
## Warning in tm_map.SimpleCorpus(myCorpus1, tolower): transformation drops
## documents
myCorpus3<-tm_map(myCorpus2, removePunctuation) # Removing punctuation symbols
## Warning in tm_map.SimpleCorpus(myCorpus2, removePunctuation):
## transformation drops documents
myCorpus4<-tm_map(myCorpus3, removeNumbers) # Removing numbers
## Warning in tm_map.SimpleCorpus(myCorpus3, removeNumbers): transformation
## drops documents
myCorpus5<-tm_map(myCorpus4, removeWords, stopwords("english")) #Removing stopwords
```

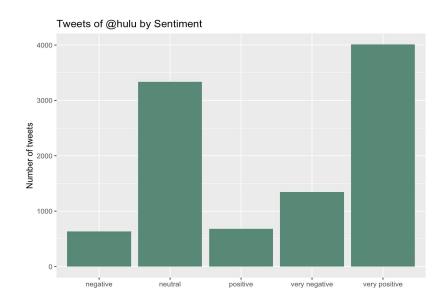
Software: Twitter Sentiment Analysis (R)

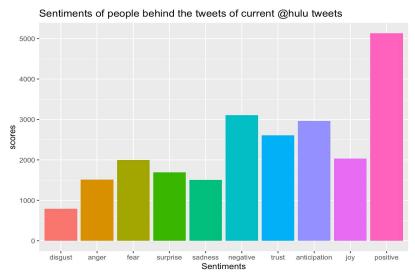
Calculate the sentiment score and plot them out in bar charts

```
library(syuzhet)
encodeSentiment <- function(x) {</pre>
  if(x \le -0.5)
    "very negative"
  else if(x > -0.5 \& x < 0)
    "negative"
  }else if(x > 0 & x < 0.5){
    "positive"
  else if(x >= 0.5){
    "very positive"
  }else {
    "neutral"
```

```
tweetSentiments <- get sentiment(as.vector(original data$text), method = "syuzhet")
tweets <- cbind(original data, tweetSentiments)</pre>
tweets$sentiment <- sapply(tweets$tweetSentiments,encodeSentiment)</pre>
ggplot(tweets, aes(sentiment)) +
geom bar(fill = "aquamarine4") +
theme(legend.position="none",
axis.title.x = element blank()) +
ylab("Number of tweets") +
ggtitle("Tweets of @hulu by Sentiment")
dw senti<-get nrc sentiment(as.vector(original data$text))</pre>
#calculationg total score for each sentiment
Sentimentscoresr<-data.frame(colSums(dw senti[,]))
names(Sentimentscoresr)<-"Score"
Sentimentscoresr<-cbind("sentiment"=rownames(Sentimentscoresr), Sentimentscoresr)
rownames(Sentimentscoresr)<-NULL
Sentimentscoresr$sentiment <- factor(Sentimentscoresr$sentiment,levels = c("disgust", "anger", "fear", "surpris
e", "sadness", "negative", "trust", "anticipation", "joy", "positive"))
ggplot(data=Sentimentscoresr,aes(x=sentiment,y=Score))+geom bar(aes(fill=sentiment),stat = "identity")+
 theme(legend.position="none")+
 xlab("Sentiments")+ylab("scores")+gqtitle("Sentiments of people behind the tweets of current @hulu tweets")
```

Visualization: Twitter Sentiment Analysis





Summary

- Most of the Hulu's tweets are considered neutral and very positive
- Sentiment frequency scores show different emotions (eg. disgust, anger, fear, surprise, sadness, negative, trust, anticipation, joy, and positive)

Result Interpretation: **Twitter Sentiment** Analysis

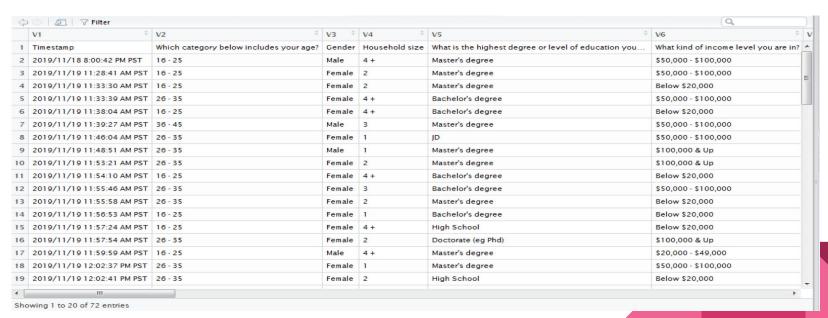
Summary on Hulu

- The positive emotions are more significant than negative in regards to Hulu's social media presence
- The anticipation of the customers is high for new TV and movies
- Low comments about disgust

Twitter Sentiment Analysis		
Sentiments	Frequency	Comments
Disgust	800	Low
Anger	1500	
Fear	2000	
Surprise	1750	
Sadness	1600	
Negative	3100	High
Trust	2600	
Anticipation	2900	High
Joy	2000	
Positive	5100	Very High

Research: Survey Analysis

 Conducted a survey to collect information about the behaviors, needs, and opinions about online streaming services



Research: Survey Analysis

Demographics

- Age/ Gender
- Education Level/ Household Size
- o Income level

User Preferences

- Streaming Service Preference
- User Behavior Preference
- Competitor Analysis (such as Netflix)
 - Sentiment Degree (10 emotions)

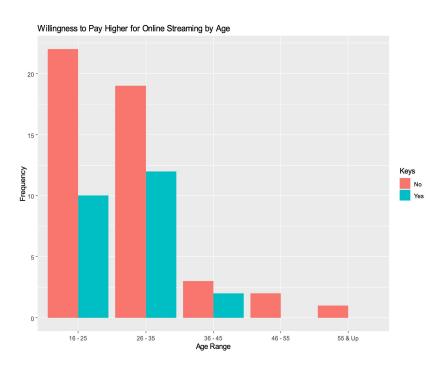


Software: Survey Analysis (R)

- Load survey data into R
- Load visualizing libraries such as "ggplot2" and "plyr"

```
online<-read.csv("C:\\Users\\sneh\\Documents\\Course Downloadable Data\\online stream.csv",header=TRUE)
head(online)
attach(online)
library(ggplot2)
library(plyr)</pre>
```

Age Comparison Analysis: willingness to pay higher for streaming service

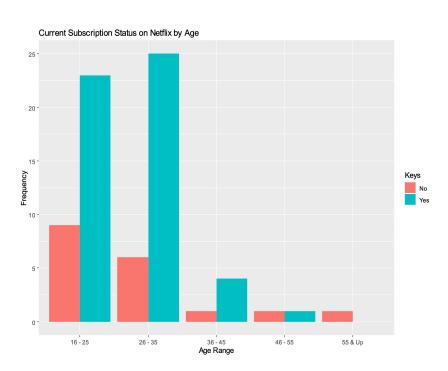


```
age.higherPay<-data.frame(table(Age,Pay.Higher))
age.higherPay$Percentage<-(age.higherPay$Freq/sum(age.higherPay$Freq))*100
age.higherPay
plot4</pre>
plot4certage
age.higherPay
plot4certage
plot4certage
age.higherPay,aes(x=Age,y=Freq,fill=Pay.Higher))+geom_bar(stat="identity",position=position_dodge())+labs(title)
e = "Willingness to Pay Higher for Online Streaming by Age", x = "Age Range", y= "Frequency",fill="Keys" )+theme(axis.text.x = element_text(angle=-90, vjust=0.5))
plot4
```

Age Comparison Analysis

Willingness to Pay Higher for Streaming Service

Age Comparison Analysis: Current Netflix Subscription Status by Age

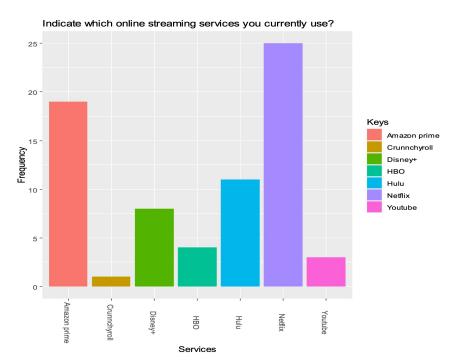


```
age.sub<-data.frame(table(Age,Subscription))
age.sub$Percentage<-(age.sub$Freq/sum(age.sub$Freq))*100
age.sub
plot3<-ggplot(age.sub,aes(x=Age,y=Freq,fill=Subscription))+geom_bar(stat="identity",position=position_dodge())+labs(title =
"Current Subscription Status on Netflix by Age", x = "Age Range", y= "Frequency",fill="Keys" )+theme(axis.text.x=element_tex
t(angle=-90, vjust=0.5))
plot3</pre>
```

Age Comparison Analysis

Current Netflix Subscription Status

Competitor Analysis: Preferred Online Streaming Service

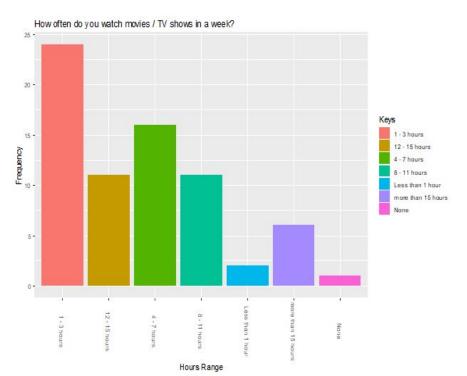


service<-data.frame(table(Service))
service
plot6<-ggplot(service,aes(x=Service,y=Freq,fill=Service))+geom_bar(stat="identity",position=position_dodge())+labs(title =
"Indicate which online streaming services you currently use?", x = "Services", y= "Frequency",fill="Keys")+theme(axis.text.
x=element_text(angle=-90, vjust=0.5))
plot6</pre>

Competitor Analysis

Preferred Online Streaming Service

Time Spent Analysis: Hours spent Watching movies/ TV shows in a week

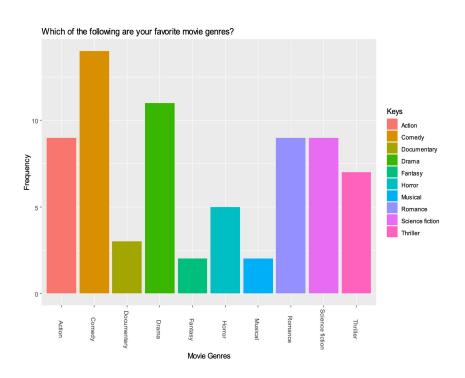


```
movies<-data.frame(table(Often.movies))
movies
plot1<-ggplot(movies,aes(x=0ften.movies,y=Freq,fill=Often.movies))+geom_bar(stat="identity",position=position_dodge())+labs
(title = "How often do you watch movies / TV shows in a week?", x = "Hours Range", y= "Frequency",fill="Keys" )+theme(axis.t ext.x=element_text(angle=-90, vjust=0.5))
plot1</pre>
```

Time Spent Analysis

Hours Spent Watching TV Shows Per Week

Customer Demand Analysis: Preferred Movie Genres

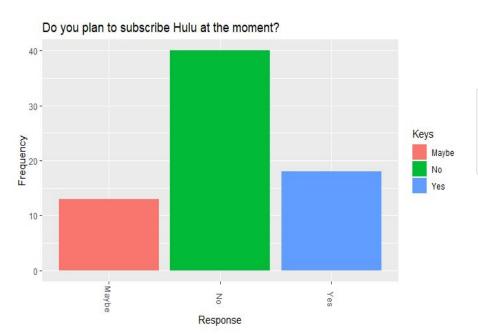


movies<-data.frame(table(favorite))
movies
plot7<-ggplot(movies,aes(x=favorite,y=Freq,fill=favorite))+geom_bar(stat="identity",position=position_dodge())+labs(title =
"Which of the following are your favorite movie genres?", x = "Movie Genres", y= "Frequency",fill="Keys")+theme(axis.text.x
=element_text(angle=-90, vjust=0.5))
plot7</pre>

Customer Demand Analysis

Favorite Movie Genres

Customer Demand Analysis: Hulu's subscription status



```
HuluSub<-data.frame(table(Hulu))
HuluSub
plot8<-ggplot(HuluSub,aes(x=Hulu,y=Freq,fill=Hulu))+geom_bar(stat="identity",position=position_dodge())+labs(titl e = "Do you plan to subscribe Hulu at the moment?", x = "Response", y= "Frequency",fill="Keys" )+theme(axis.text. x=element_text(angle=-90, vjust=0.5))
plot8
```

Customer Demand Analysis

Hulu's Subscription Status

Result Interpretation: Survey Analysis

- Age Comparison Analysis
 - Most of the age groups are not willing to pay a higher price for an online streaming service than what they are already paying for. Most notably, the younger age groups 16-25 and 26-35 who are already paid subscribers to Netflix.
- Competitor Analysis
 - Amongst the online streaming services, Netflix is the top choice and *Hulu came only at third* while Amazon Prime came in at second. The new streaming service, Disney+ came up as the fourth choice of consumers even if it is the newest among the choices.
 - Consumers has allocated 1-3 hours of watching their favorite movies/TV shows a week.
- Customer Demand Analysis
 - Of all the movie genres that consumers follow, comedy is the most favorite while musical and fantasy
 are tied in last place. This is good indicator for streaming services to concentrate on movies and TV
 shows that are funny and gives consumers a good laugh.
 - Consumers are not ready to subscribe to Hulu at the moment.

Situation Comparison:

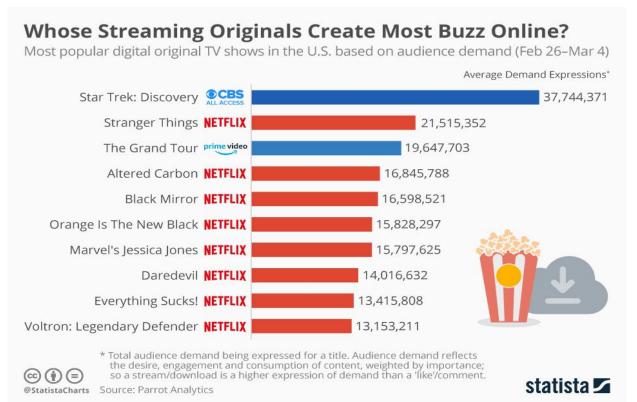




NETFLIX

- Identifying main factors contribute to Netflix's growth
- Applying possible strategies
 learned from Netflix

Situation Comparison



Netflix originals dominate the charts for Top Streaming Originals, whereas Hulu does not even appear in the chart.



Richter, F. (2018, March 22). Whose Streaming Originals Create Most Buzz Online?, Retrieved November 24, 2019, from https://www.statista.com/chart/9759/most-popular-streaming-series/

A **NETFLIX** ORIGINAL SERIES

Debuted in 2013; Added 4 million new subscribers in Q1 2014.



10.7% U.S. subscribers watching at least one episode in its first 11 days.



64 million Netflix household watched it within 4 weeks of its launch.

House of Cards

Orange is the New Black

Daredevil

Bird Box

Stranger Things



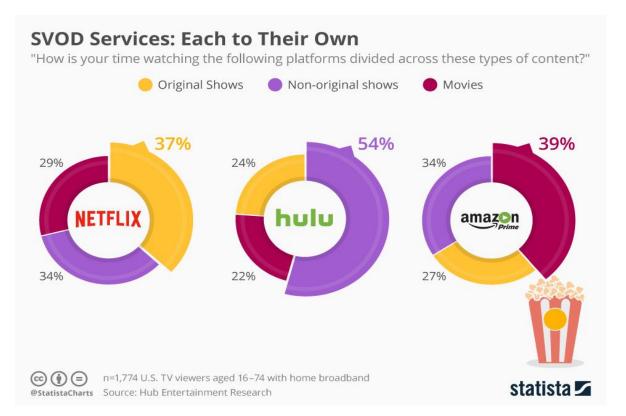
Netflix says: "105 million users watched at least one episode of OITNB".



More than 45 million accounts watched Netflix Original horror movie, "Bird Box".



Situation Comparison



This chart shows how people in the U.S. use subscription video on demand (SVOD) services differently in 2017. Most of the Hulu subscribers watch non-original shows.

Reference:

Armstrong, M. (2018, January 24). SVOD Services: Each to Their Own, Retrieved November 24, 2019, from https://www.statista.com/chart/12660/svod-services_-each-to-their-own/.

Situation Comparison

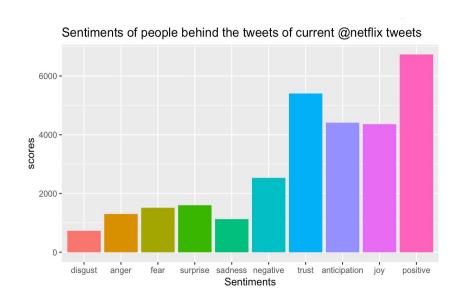
<u>Hulu</u>

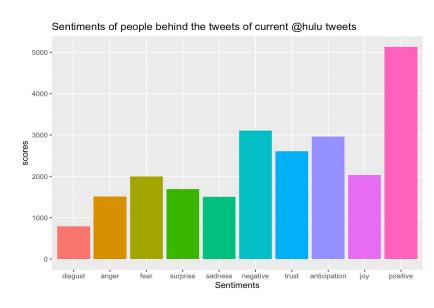
- In 2018, Hulu released a promotion for a year of Hulu at 99 cents per month to increase subscribers.
- In 2019, Disney+ and Hulu offered a bundle for Disney + with Hulu and ESPN for 12.99 a month.

Netflix

- Netflix credits the recent increase of 6.8 million subscribers to "smart content decisions." (Hein, 2019). For instance, Stranger Things Season 3 led to a large boost in subscribers.
- Netflix spends a lot on marketing, but it also does primarily focus on obtaining new content they believe will spark interest such as "The Irishman" and "Marriage Story." (Zeitchik, 2019).

Situation Comparison: Twitter Sentiment Analysis

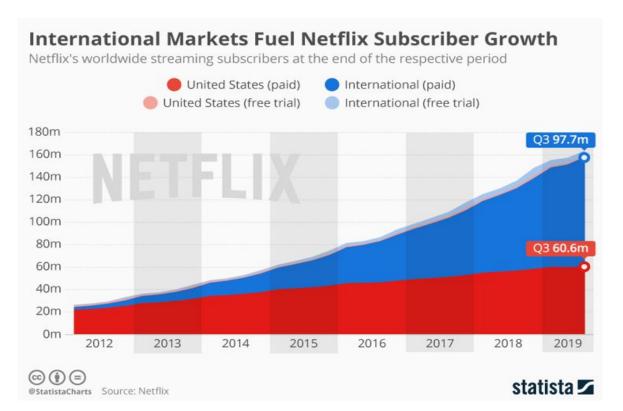




Similarities: Overall trend of having a low numbers in disgust, anger, fear, surprise as compared to positive, joy, and anticipation.

Differences: Netflix has much more even spread over trust, anticipation, joy, and positive whereas positive in Hulu is much greater than trust, anticipation, and joy. Overall, we see that more of the Netflix tweets were happier than the Hulu tweets.

Situation Comparison



Reference:

Richter, F. (2019, October 17). International Markets Fuel Netflix Subscriber Growth. Retrieved December 2, 2019, from https://www.statista.com/chart/10311/netflix-subscriptions-usa-international/

This chart shows the number of Netflix memberships by region. Netflix now has 158.3 million paying subscribers, 60.6 million of which are in the U.S. and 97.7 million overseas.

What can we learn from Netflix

Globalization strategy

- Netflix is available in the U.S. and *internationally (190 countries)* while Hulu is only available in the U.S. (Brennan, 2018).
- By reaching an international level, Netflix acquired customers more cheaply with 90 million international subscribers, which is just 1% of the global population. Conversely, acquiring domestic subscribers is much harder because of saturation.

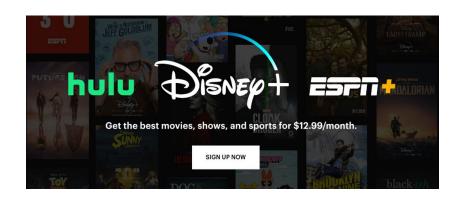
Content strategy

- Netflix kicked off streaming original content with the debut of "House of Cards" in 2013. Since then, Netflix released hundreds of original movies and TV series such as "Orange is the New Black", "Stranger Things" and etc.
- Available exclusively on this streaming service, original content should be a draw for subscribers who can't view it on Hulu, Amazon or any other streaming service. (Lovely, 2018).

Marketing strategy

- Netflix promotes its original TV series through teasers and trailers on YouTube.
- Netflix presents its brand identity as casually humorous that resonates well among the millennials.

Impact



8.2% increase

in number of subscribers for Hulu shown since last reported value of 26.8 million in May 2019

Conclusions and Recommendations

Conclusions:

- Twitter Sentiment showed that generally people are more happy with Netflix as compared to Hulu, agreeing with market research and situation comparison.
- Our Survey Analysis showed that most people are not interested in subscribing to Hulu at the moment and agreed with market research of large number of Netflix subscribers over Hulu.
- Based on the situation comparison with Netflix, the company used content strategy and expansion globally to attract new subscribers. We can use this information to increase Hulu's number of subscribers.

Recommendations:

- Hulu must:
 - continue having live TV package and create more comedy shows/series.
 - create more original series that are available exclusively on this streaming service.
 - lessen the costs incurred by the customers when ads are removed.
- Hulu's recent bundle offer with Disney+ should increase number of subscribers within the next month or two.

References

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References (cont.)

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- Zeitchik, S. (2019, October 16). Netflix grows ahead of streaming competition from Disney +, Apple TV, and HBO Max, Retrieved November 27, 2019 from https://www.washingtonpost.com/business/2019/10/16/with-competition-looming-netflix-hangs-its-subscribers-now/.