

NETFLIX

FORECASTING

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MSMI 608 MARKETING ANALYTICS I - 01



AGENDA

1. Situation (Zoe)
2. Problem Statement (Zoe)
3. Model Selection(Zoe)
4. Solution Process (Natalia)
5. Research Method (Natalia)
6. Research Analysis (Kyle, Sophia)
7. Model Results and Visualization(Kyle, Sophia)
8. Results Interpretation (Sophia)
9. Situation Comparison (Natalia)
10. Conclusions (Tanmayee)
11. Recommendations (Tanmayee, Mustafa)
12. References

SITUATION

Netflix has been experiencing a loss of market share while most of other streaming platforms were growing.

NETFLIX

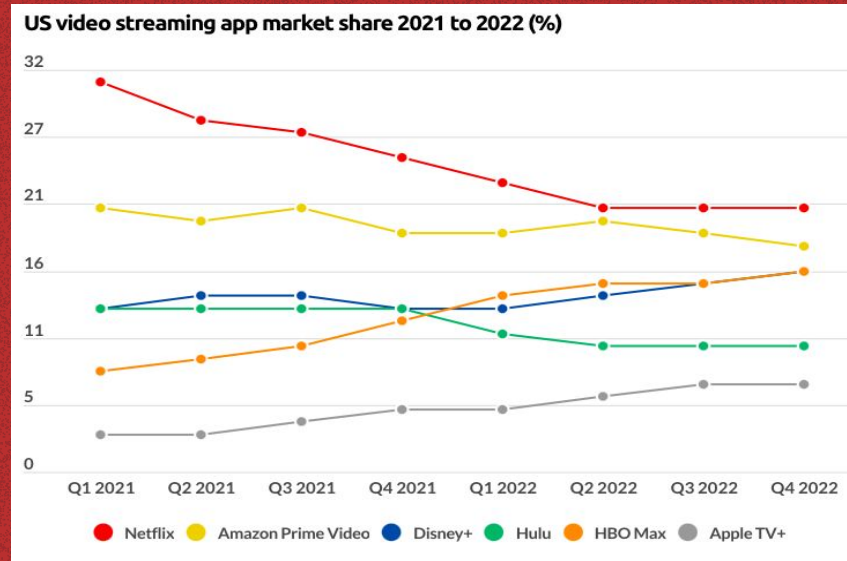
AMAZON
VIDEO

DISNEY +

HULU

HBO MAX

APPLE TV +



Source: Business of App



PROBLEM STATEMENT

Problem: Netflix currently owns 230.75 million subscribers but growth has been slowed down since Q1 2021.

Dependent variable: Number of subscribers

Numerical Threshold: To exceed to a total of 276.9 million subscriber (20% increase) in 2023.

MODEL SELECTION

SOLUTION MODEL

MULTI CAUSAL

- **Identify Key Drivers:** Gain a greater understanding of factors that are most important for changes in subscribers
- **Forecast more accurately**
- **Better Decision-Making**



**TOTAL 276.9 MILLION
SUBSCRIBERS**
+20%

TIME SERIES

- **Understand Trends:** Better understanding of underlying factors that are driving subscribers
- **Accurate Forecasting**
- **Monitoring & Evaluation**

SOLUTION PROCESS

TIME SERIES

**PREDICT Q1 2023
SUBSCRIBERS**

From historical
Quarterly Netflix
subscribers count

Applying regression
analysis on Excel

CAUSAL ANALYSIS

**PREDICT FUTURE
CONDITIONS**

By finding factors that
affect subscriber
numbers

Applying regression
analysis on R

GENERATE FINAL RESULT

**CREATE ACCURATE
FORECASTING RESULT
BASED ON BOTH
FORECAST MODELS**

RESEARCH METHOD : SECONDARY RESEARCH



INTERNAL REPORTS

- Financial Reports
- Shareholder Letters



DATABASE

- Statista
- ProQuest One Business
- World Bank Data

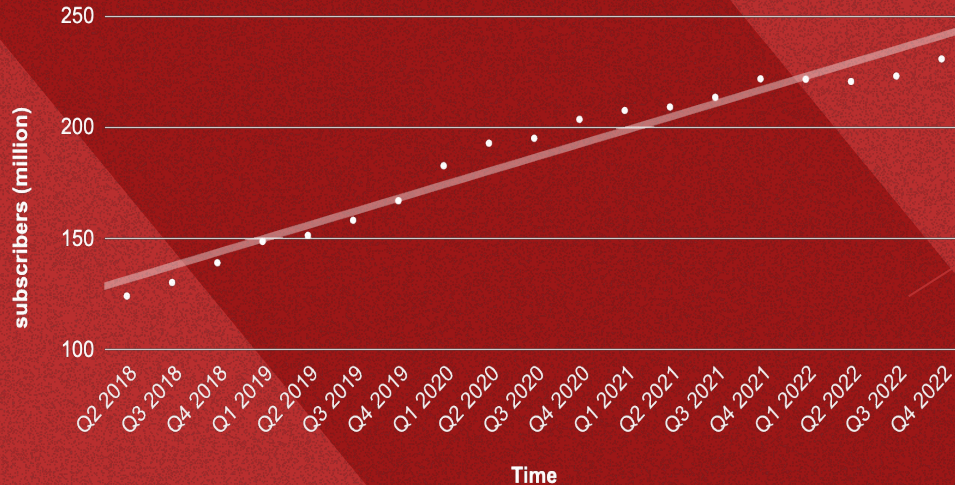


WEB SEARCHES

- News
- JPMorgan reports
- SEC 10-K /10-Q of Netflix

RESEARCH ANALYSIS 1 - TIME SERIES

- **Research data:** Number of Netflix paid subscribers worldwide
- **Period:** Quarterly data in past 5 years
- **Source:** Statista



Quarterly Netflix subscribers count worldwide	
Quarter	subscribers (million)
Q1 2018	118.90
Q2 2018	124.35
Q3 2018	130.42
Q4 2018	139.26
Q1 2019	148.86
Q2 2019	151.56
Q3 2019	158.33
Q4 2019	167.09
Q1 2020	182.86
Q2 2020	192.95
Q3 2020	195.15
Q4 2020	203.66
Q1 2021	207.64
Q2 2021	209.18
Q3 2021	213.56
Q4 2021	221.84
Q1 2022	221.64
Q2 2022	220.67
Q3 2022	223.09
Q4 2022	230.75

TIME SERIES RESULTS & VISUALIZATION

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.975806351							
R Square	0.952198034							
Adjusted R Square	0.949386154							
Standard Error	7.885361672							
Observations	19							
ANOVA								
	df	SS	MS	F	Significance F			
Regression	1	21055.89385	21055.89385	338.633912	1.1618E-12			
Residual	17	1057.041788	62.1789287					
Total	18	22112.93564						
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	119.6100526	4.058566473	29.47100988	4.9163E-16	111.047226	128.172879	111.047226	128.172879
1	6.077842105	0.330281455	18.40200836	1.1618E-12	5.38100915	6.77467507	5.38100915	6.77467507

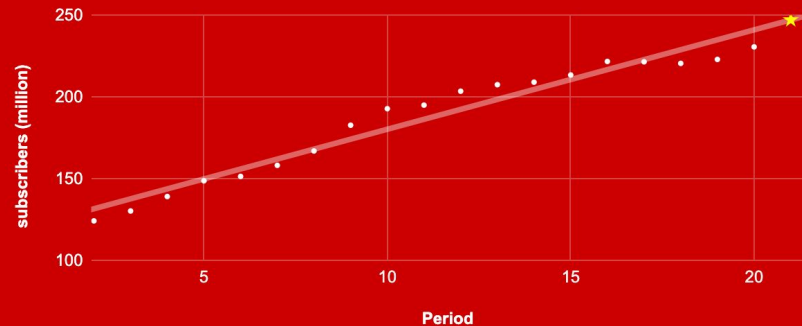
Adj. R Square is close to 1
→ regression model represent subscriber numbers well by 95%

NUMBER OF SUBSCRIPTION IN Q1 2023

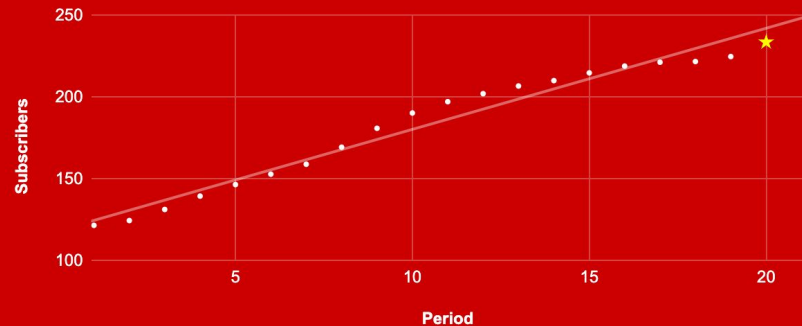
= (INTERCEPT) + (SLOPE) * (TIME, IN PERIODS)

= 119.61 + 6.077842 * 21 = 247.24M

Subscribers forecasting

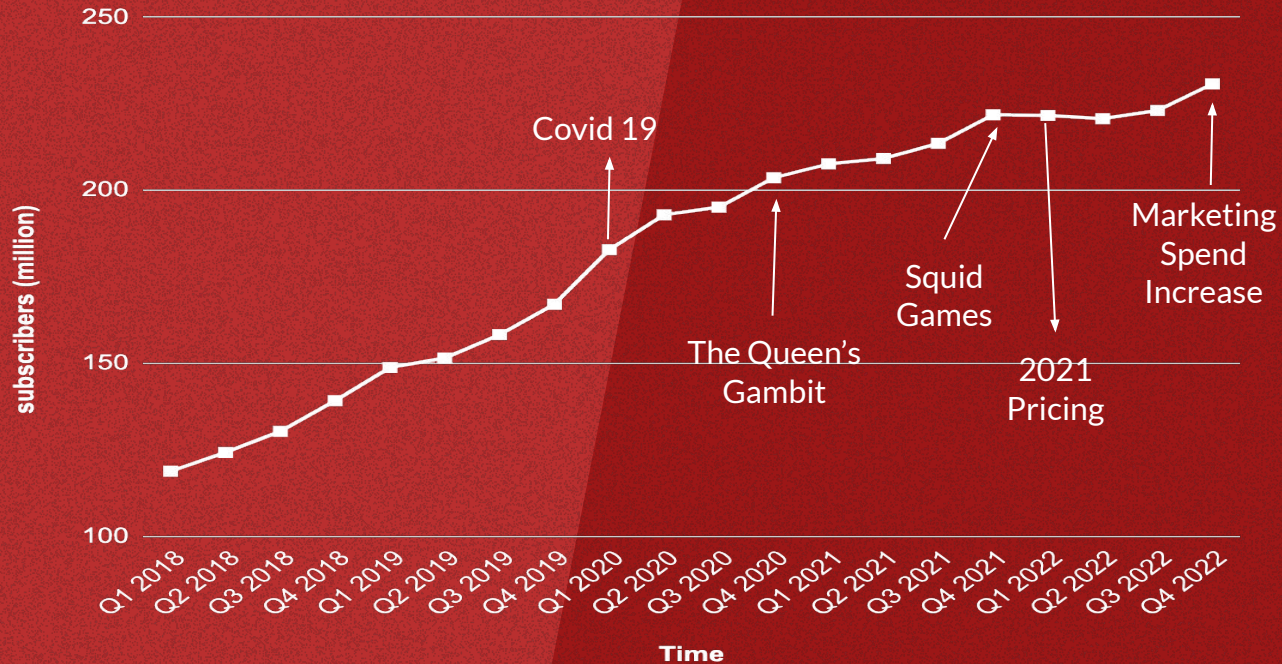


Subscribers forecasting (smoothed with 3PMA)



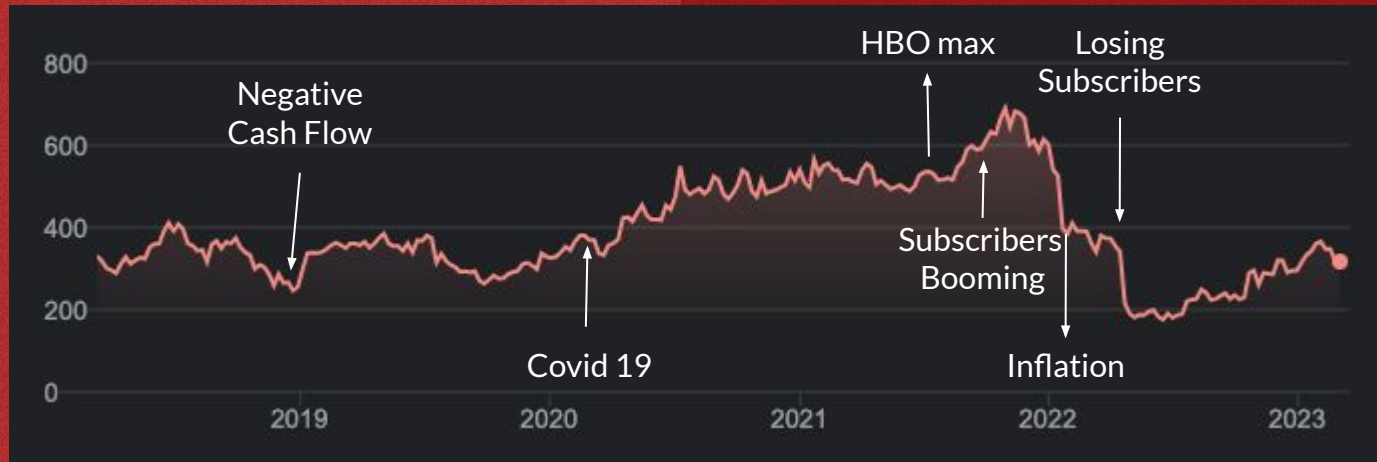
RESEARCH ANALYSIS 2 - CAUSAL ANALYSIS

Subscribers number Chart, including significant events



RESEARCH ANALYSIS 2 - CAUSAL ANALYSIS

Netflix Stock Price Chart, including significant events



RESEARCH ANALYSIS 2-CAUSAL ANALYSIS

- **Period:** Quarterly data in past 5 years
- **Factors chosen:** External Factors (Market Condition, Competitive) & Internal Factors(Pricing, Product, Promotion)

Time	Subscribers (Millions)	External factors					Internal factors						
		world GDP per capita (\$)	world inflation rate	Penetration rate of over-the-top (OTT) video users	Number of HBO subscribers	Number of Hulu subscribers	Number of nominations for the Primetime Emmy Awards	Number of original content titles releases	Content Spend (Millions)	Marketing expense (Millions)	Pricing-Basic	Pricing-Standard	Pricing-Premium
Q1 2018	118.9	10,782	3.60%	33.2	44.07	35.935294	28.00	11	2986.747	536.777	8.99	10.99	13.99
Q2 2018	124.35	10,895	3.70%	33.2	44.07	20	28.00	23	3033.721	592.007	8.99	10.99	13.99
Q3 2018	130.42	10,996	3.50%	33.2	44.07	35.935294	28.00	48	3238.717	510.33	8.99	10.99	13.99
Q4 2018	139.26	11,096	3.50%	33.2	50	35.935294	28.00	76	2784.252	730.355	8.99	10.99	13.99
Q1 2019	148.86	11,197	3.50%	36.2	44.07	22.8	29.25	59	2997.746	616.578	8.99	12.99	15.99
Q2 2019	151.56	11,298	3.50%	36.2	44.07	25.2	29.25	96	3325.103	603.15	8.99	12.99	15.99
Q3 2019	158.33	11,398	3.20%	36.2	44.07	27.9	29.25	97	3648.292	553.797	8.99	12.99	15.99
Q4 2019	167.09	11,500	3.20%	36.2	43	28.5	29.25	122	3945.542	878.937	8.99	12.99	15.99
Q1 2020	182.86	11,506	3.20%	41.3	44.07	30.4	40.00	126	3294.275	503.83	8.99	13.99	17.99
Q2 2020	192.95	11,061	3.10%	41.3	36.3	32.1	40.00	111	2510.782	434.37	8.99	13.99	17.99
Q3 2020	195.15	11,245	3.30%	41.3	38.1	35.5	40.00	125	2653.886	527.597	8.99	13.99	17.99
Q4 2020	203.66	11,701	3.50%	41.3	41.5	36.6	40.00	105	3320.341	762.565	8.99	13.99	17.99
Q1 2021	207.64	11,826	3.80%	44.4	44.2	39.4	32.25	103	3284.576	512.512	8.99	14.99	17.99
Q2 2021	209.18	12,028	4.10%	44.4	47	41.6	32.25	96	4096.75	603.973	8.99	14.99	17.99
Q3 2021	213.56	12,219	4.40%	44.4	45.2	42.8	32.25	129	4666.237	635.948	8.99	14.99	17.99
Q4 2021	221.84	12,416	3.50%	44.4	46.8	43.8	32.25	129	5654.639	792.713	8.99	14.99	17.99
Q1 2022	221.64	12,638	3.60%	42.9	48.6	45.3	26.25	91	3584.164	555.978	9.99	15.49	19.99
Q2 2022	220.67	12,850	3.60%	42.9	44.07	45.6	26.25	91	4687.011	574.96	9.99	15.49	19.99
Q3 2022	223.09	13,070	3.60%	42.9	44.07	46.2	26.25	91	4582.671	567.954	9.99	15.49	19.99
Q4 2022	230.75	13,291	4.50%	42.9	44.07	47.2	26.25	91	3985.192	831.61	9.99	15.49	19.99

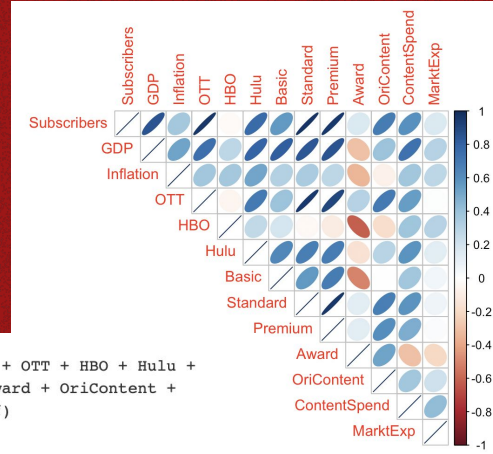
Problem:
Raw Data with
missing values

← Impute
missing values
with imputation
methods

RESEARCH ANALYSIS 2 - CAUSAL ANALYSIS

Analyze with R:

- Correlation visualization with corplot.
- Linear regression model- determine whether variables are associated to Subscribers and if there are statistically significant (p value < 0.05)
- Variables identified to strongly related to Subscription numbers:
 - Worldwide penetration rate of OTT (over-the-top) video users
 - Marketing expense



```
## Call:
## lm(formula = Subscribers ~ GDP + Inflation + OTT + HBO + Hulu +
##      Basic + Basic + Standard + Premium + Award + OriContent +
##      ContentSpend + MarktExp, data = data.df)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -5.9213 -1.5106  0.1625  1.7331  4.2684
##
## Coefficients: (1 not defined because of singularities)
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -2.990e+02  9.595e+01  -3.116  0.01431 *
## GDP          1.078e-02  1.216e-02   0.886  0.40124
## Inflation    -7.204e+02  5.524e+02  -1.304  0.22850
## OTT          6.922e+00  2.003e+00   3.456  0.00861 **
## HBO         -8.249e-01  5.065e-01  -1.628  0.14208
## Hulu         3.177e-01  2.911e-01   1.091  0.30687
## Basic        1.725e+01  1.683e+01   1.025  0.33536
## Standard     5.688e-01  5.105e+00   0.111  0.91402
## Premium     -3.033e+00  5.909e+00  -0.513  0.62155
## Award         NA           NA       NA       NA
## OriContent    1.143e-01  7.017e-02   1.629  0.14206
## ContentSpend -4.229e-03  3.507e-03  -1.206  0.26235
## MarktExp      3.706e-02  1.355e-02   2.735  0.02565 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```


CAUSAL ANALYSIS RESULTS & VISUALIZATION

```
Call:
lm(formula = Subscribers ~ OTT + MarktExp, data = data.df)

Residuals:
    Min       1Q   Median       3Q      Max
-12.9176  -8.0609  -0.0688   5.2470  15.0090

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -171.62424    22.11343   -7.761 5.50e-07 ***
OTT          8.24462     0.48866   16.872 4.73e-12 ***
MarktExp     0.04580     0.01759    2.603 0.0186 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9.236 on 17 degrees of freedom
Multiple R-squared:  0.9452, Adjusted R-squared:  0.9387
F-statistic: 146.5 on 2 and 17 DF, p-value: 1.913e-11
```

Adj. R Square is close to 1
→ regression model represent
subscriber numbers well by 93.8%

NUMBER OF SUBSCRIPTION

$$\begin{aligned}
 &= \text{📍} + \text{💻} + \text{💰} \\
 &= (\text{INTERCEPT}) + (\text{COEFFICIENT 1}) * (\text{OTT}) + (\text{COEFFICIENT 2}) * (\text{MARKT EXP}) \\
 &= -171.624 + 8.245 * 45.7 + 0.046 * 1,000 \\
 &= \underline{251 \text{ M}}
 \end{aligned}$$

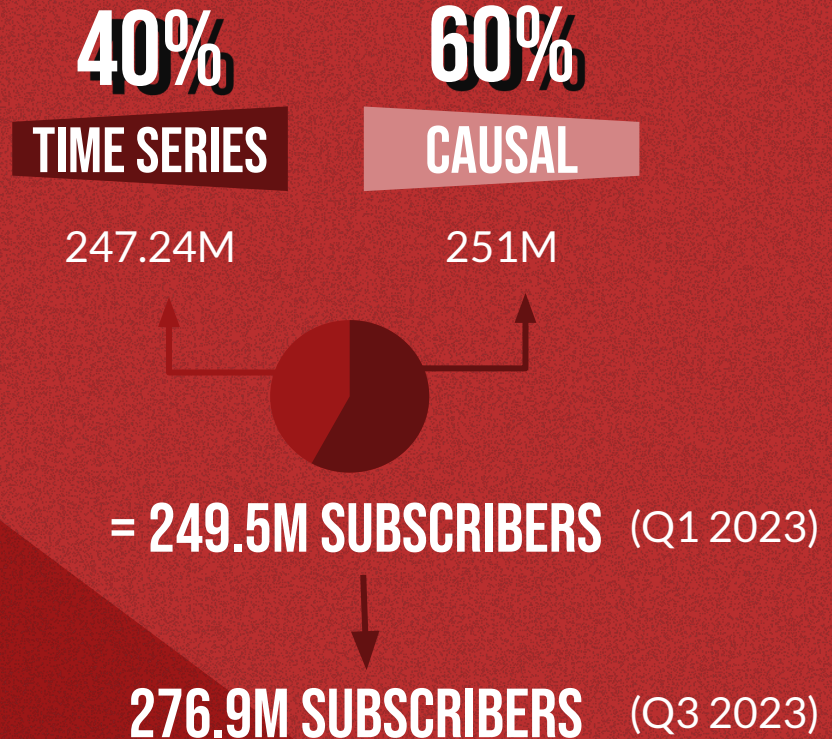
*Est. user penetration rate of OTT is 45.7% by 2023 according to Statista Advertising & Media Outlook.
*Est. Marketing expense spent increase to \$1,000m in the next quarter

RESULTS INTERPRETATION

By combining the two forecasting results, Netflix subscribers are set to increase to 249.5 million in Q1 2023 (8% increase vs 2022).

By constantly investing \$1 billion in marketing expenses in each quarter,

Subscribers are expected to exceed to 276.9 million by Q3 2023. (20% growth vs 2022)



SITUATION COMPARISON

COMPETITOR

USERS

MARKETING SPENDING

HBO MAX

69.4 MILLION

\$634.5 MILLION

HULU

42.8 MILLION

\$144.6 MILLION

AMAZON PRIME VIDEO

200 MILLION

\$271.5 MILLION

CONCLUSION

- With an abundance of films and TV shows available today, it is crucial to ensure that Netflix always has exceptional content that caters to viewers' diverse preferences and moods and further increase subscription. Therefore, the top priority is to enhance the quality of the content.
- Apart from the content itself, we recognize that people likely join streaming platforms when they have heard about a "must-watch" title from a friend or seen the buzz on social media. Therefore, **investing in marketing campaigns** can help raise awareness, attract new users and encourage existing members to watch more, thereby improving retention.
- Overall, a quantitative suggestion from this study, Netflix should invest 1 billion in marketing activities each quarter. By continuing invest 2~3 quarters, it is expected to yield the outcome of a projected 20% growth (277M) in subscriptions by 2023.

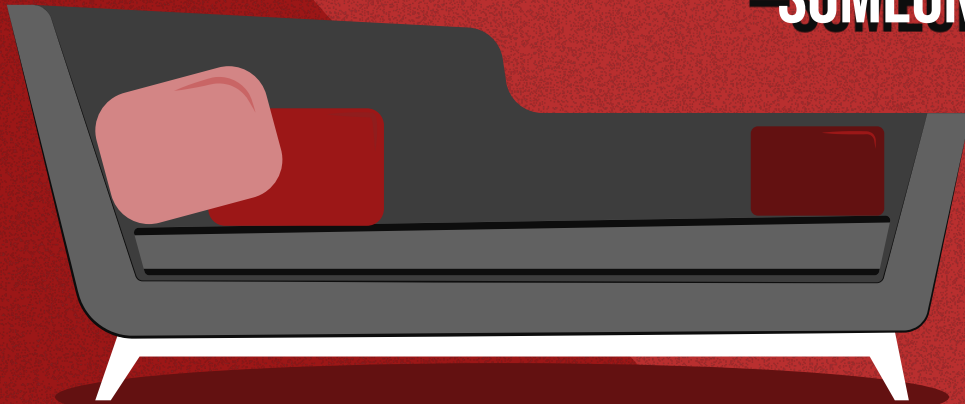
RECOMMENDATIONS

Based on past data, the Average Quarterly Marketing Spend is \$700 Million. As we suggest Netflix increase its quarterly marketing expense in 2023 to \$1 Billion. The breakdown of the detailed avenue to invest is as follows.

Avenue	Marketing Spend
Virtual Reality	\$52.5 Million
In-Built Shopping Web Product	\$97.5 Million
Live Streaming Services Marketing	\$150 Million
Miscellaneous Marketing	\$700 Million
Total	\$1 Billion

“We’re not the ones waiting for
innovation to happen. Innovation
happens here.”

—SOMEONE FAMOUS FROM NETFLIX



1. EXPLORE LIVE STREAMING

The live streaming market size in 2022 is at US \$70.59 billion dollars and is expected to grow by **US \$330.51 billion dollars by 2030**

\$13.1 B



SPORTS OTT REVENUE

Sports OTT subscription revenue in the United States Expected revenue - \$22.6 billion in 2027, **73%** increase over the next five years

Live streaming/ voting represents a new form of data mining that gives Netflix richer, more specific audience information than it's ever had before. We will budget \$150 Million of our Marketing spends for this.

2. INTRODUCTION OF A NEW VIEWING EXPERIENCE THROUGH VIRTUAL REALITY

Netflix has always been about innovation and adding new technology to their Arsenal

57% of subscribers say they would drop the service if it were ever to introduce ads.

The choice between Frosties and Sugar Puffs in **Bandersnatch** is already in itself an ad.
73% of people picked Frosties which could be valuable exposure and insight for the brand.

Introduce **subscription-only VR headsets**

Programmatic product placement infused within the story script



A COMPLETELY NEW IMMERSIVE MOVIE EXPERIENCE

Netflix can do a pilot test for subscription only VR headsets with 4 content projects and 10,000 VR headsets to begin with

MILESTONES

1. 4 Annual Titles (Quarterly)
2. Minimum Lock in of 1 year
3. A completely immersive visual experience
4. An Invite only system to create exclusivity

SUBSCRIPTION MODEL

1. 29.99\$ a quarter subscription for VR Headset
2. Content will play on your current active Netflix subscription

KEY TAKEAWAYS

1. Programmatic Product Placements
2. Inbound Marketing
3. Brand Awareness
4. Click Through Rate (Quantifiable)
5. A Completely new Marketing Landscape

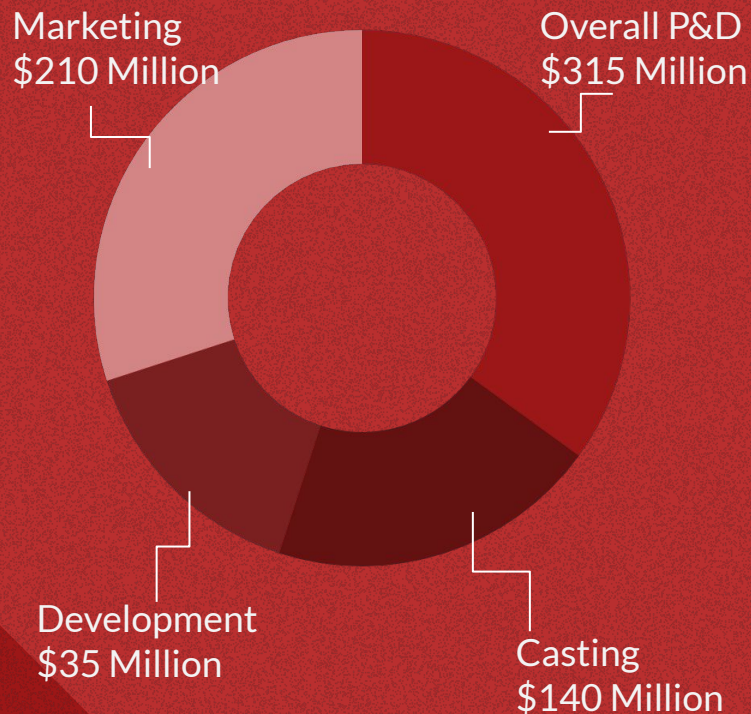
The background of the slide is a vibrant red with a sunburst or radial pattern emanating from the center. The rays are of varying lengths and angles, creating a dynamic, starburst effect.

\$ 7 BILLION

Netflix's Forecasted Spend amount for Netflix Originals in 2023

VR CONTENT DEVELOPMENT COST BREAK DOWN

10% OF \$7 BILLION



\$35 MILLION
DEVELOPMENT

5% of the overall est.
budget

Source: VR Vision Group

\$140 MILLION
CASTING

20% of the overall est.
budget

\$210 MILLION
MARKETING

30% of the
overall est.
budget

\$315 MILLION
**OVERALL PRODUCTION
& DISTRIBUTION**

45% of the
overall est.
budget

Estimations are purely based on Netflix Inc.
Historical data

VIRTUAL REALITY USER STATISTICS

01

171 MILLION PEOPLE

Use VR tech Globally

02

70.8 MILLION VR USERS

In the US in 2022. 21%
of the population

03

\$227.34 BILLION

Global VR Market
expansion 2029

04

37% OF US CONSUMERS

Are “Excited” about
spending time in VR

05

8 OUT OF 10

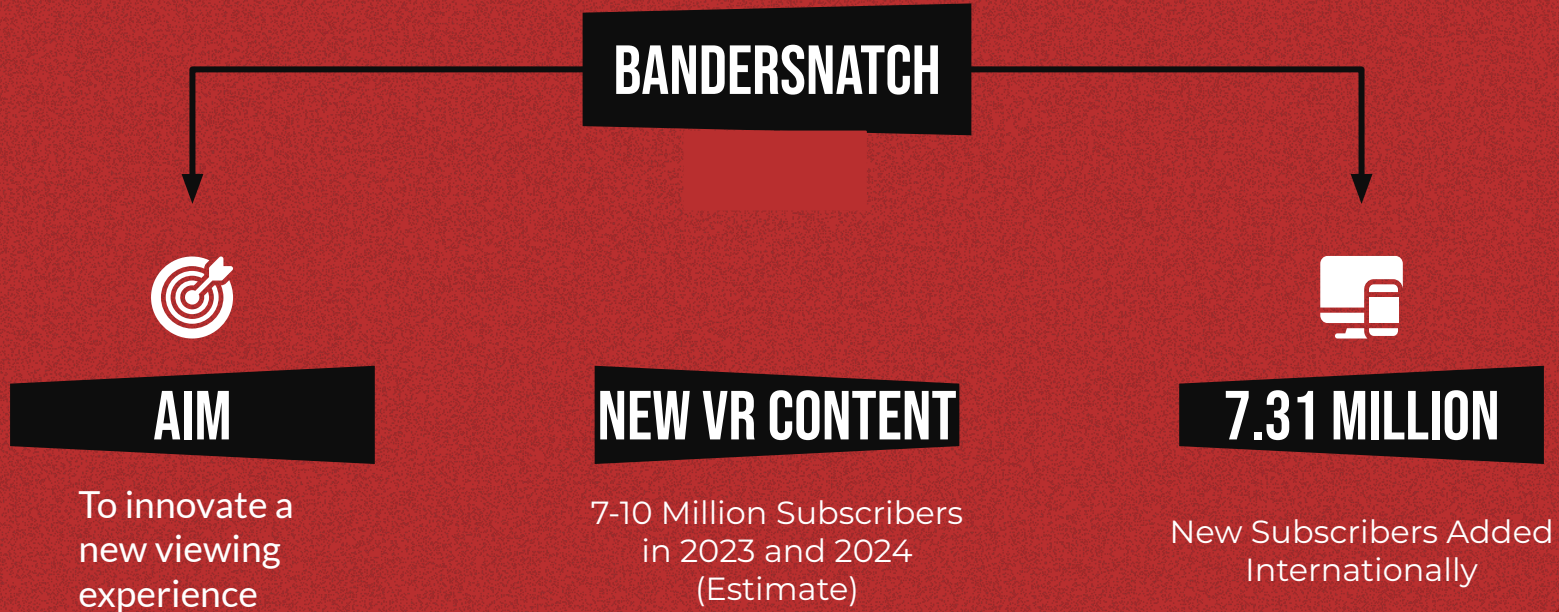
Consumers describe VR
as a “positive”
experience

06

48% OF US CONSUMERS

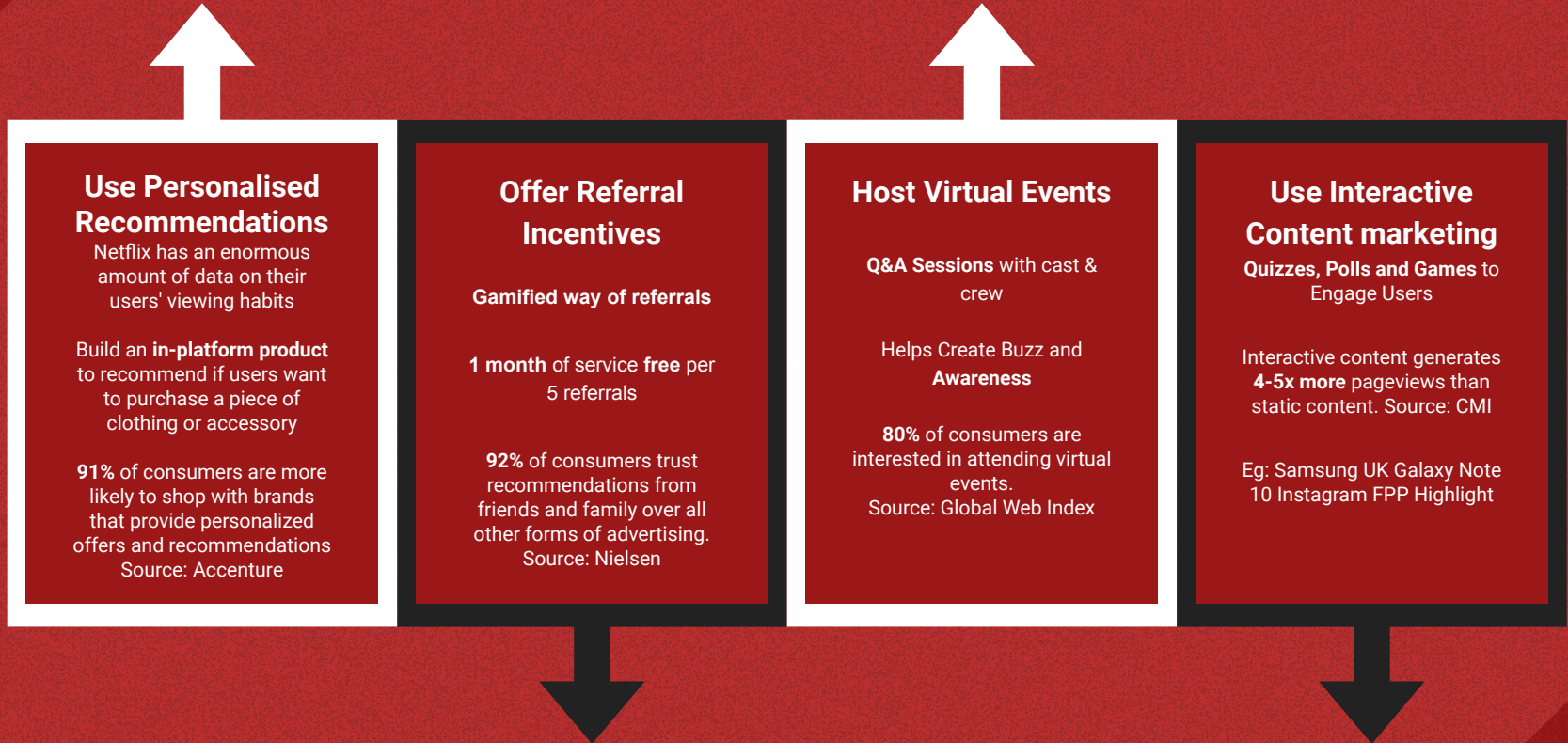
Have at least had one
VR Experience

HOW CAN THIS INCREASE SUBSCRIBERS?



3. INNOVATIVE MARKETING AVENUES

We suggest this interactive marketing strategy may help in our goal of increasing in subscribers



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THANKS!

Do you have any questions?

