

PROFESSIONAL TRAINING REPORT

AT

**Sathyabama Institute of Science and Technology
(Deemed to be University)**

Submitted in partial fulfillment of the requirements for the award
Of Bachelor of Technology Degree in Information Technology

By

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DEPARTMENT OF INFORMATION TECHNOLOGY

SCHOOL OF COMPUTING

SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited with Grade "A" by NAAC

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APRIL-2022



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the Bonafide work of HARISH,40120035 who carried out the project entitled "OTT VIEWERS ANALYSIS" under my supervision from February 2023 to April 2023.


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ACKNOWLEDGEMENT

I am pleased to acknowledge my sincere thanks to **Board of Management of SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. I am grateful to them.

I convey my thanks to **Dr.T.SASIKALA M.E.,Ph.D, Dean**, School of Computing **Dr.R.Subhashini** Head of the Department of Information Technology for providing me necessary support and details at the right time during the progressive reviews.

I would like to express my sincere and deep sense of gratitude to my Project Guide **Dr.P.AJITHA** for his valuable guidance, suggestions and constant encouragement paved way for the successful completion of my project work.

I wish to express my thanks to all Teaching and Non-teaching staff members of the **Department of Information Technology** who were helpful in many ways for the completion of the project

TRAINING CERTIFICATE

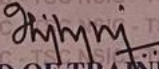
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HEAD OF TRAINING


HEAD OF CENTRE

ABSTRACT

When we think of OTT (Over the Top), I remind the older days when CD player used to be popular and people were crazy & love to see the programmes or movies on DVD player. Slowly it transforms to the availability of cable connection then the technology brought the concept of pen drive and the YouTube which grow as major channel for viewers. TV, itself brought major evolution as LED, touch screen, inbuilt internet availability etc. With these variations the recent trends in market is OTT video streaming. The availability of content, easy access to variety of shows, user friendly nature and continuity in shows compels the users to subscription of OTT video streaming. Deloitte report encompasses the video streaming subscription around 8 US\$ billion in 2020. The total number of smartphone users in India is expected to almost double to cross 700 million by 2022, cementing the country's position as the second-largest market for smartphones in the world. One of the key drivers of mobile advertising is the Indian consumer's insatiable appetite for video content, which is expected to constitute 75 percent of the data consumption in the country by 2021 (Deloitte Report, 2020). The growth is being driven primarily by consumers' ever-increasing hunger for streaming video over the internet, now amplified by the migration of more broadcast and cable TV onto direct-to-consumer over-the-top (OTT) internet delivery networks. This study aims to pinpoint the features that influence the OTT video streaming and the effect of cost element on user subscription for OTT video streaming. Keywords: OTT, Cost effectiveness on OTT, User subscription for OTT, Content variety

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1.INTRODUCTION

When we think of OTT, I remind the olden days when CD player used to be popular and people were crazy & love to see the programmes or movies on DVD player. Slowly it transforms to the availability of cable connection then the technology brought the concept of pen drive and the YouTube which grow as major channel for viewers. TV itself brought major evolution as LED, touchscreen, inbuilt internet availability, etc. With these variations the recent trends in market is OTT video streaming. The availability of content, easy access to variety of shows, user friendly nature and continuity in shows compels the users to subscription of OTT video streaming. In the recent year, the work culture of organizations due to covid has also created an impact on OTT video streaming subscription. Covid 19 has generated leisure time to families in India. People started to spend more time on online streaming services and get engaged with content on television. Chats on different platforms, video calls, web-series and movies turn out to be most favorite choices of people to spend time. OTT platform boomed to get quality content. It has grown as a convenient and easy option for people. It casts quality content with variety of options and without any advertisement. The easy availability of smartphones has also enabled large part of the population to gain access to online platforms. This point made lot of people from urban area to subscribe the OTT platform. 500 million smartphone users exist currently in India.

2. AIM AND SCOPE

2.1 AIM

Though OTT is not a potent and significant option for Movie audience as a larger screen, Dolby digital sound etc. (Karim 2020), but OTT platform during lockdown played a key role as stress burster in the lives of working population. Not only working population but it emerged as an anxiety reliever for all age groups who are forced to remain in their homes for months. The various services offered by OTT platform like convenience, preference, flexibility, and cost-benefit affect TV providers (Rono and Mugeni, 2019). Die-hard OTT subscribers avoid TV broadcasting. Nonusers of OTT platform also perceive online video platform as a substitute for TV (Cha and Chan-Olmsted 2012). This booming OTT platform rather has no contribution to government's tax revenue and even no advantage to the income of access providers. With technological evolution and internet progression, soon TV may be obsolete for the upcoming generations. The lockdown because of COVID-19 has been a blessing for OTT players and subscriptions for OTT platforms such as Zee5 and AltBalaji have grown tremendously (Kaushal, 2020). The revolution in telecom industry, easy availability of mobile handsets in economy rates, 4G, 5G revolution, etc. factors have tremendously enhanced the OTT mobile users. The pricing model for mobile content is also an influential factor to increase the number drastically in OTT mobile users. In upcoming days, it will become a part of day to day leisure time of life and slowly.

2.2 Research Motivation

This platform turned out as a major preference for people to spend quality time with family and friends. Pandemic has forced the generation to work from home with a flexible work schedule provided them to enjoy the online streaming services and get engaged with quality content on television or mobiles. This OTT stimulated younger generation more as it is easy to watch on mobile with a great economic package. With the lowest subscription of 199/- rs. Friends can share and experience the delight of their choice. As once you subscribe the package you have no limit on consumption of data. So, youngsters can choose to see with their own options with a single subscription. Moreover, the variables like own convenience in terms of time, choice, rate of subscription, age, no advertisement, one go to complete one series, and many more impacted a lot in the growth of OTT platform. Today the broadcasters have also focused on their own digital platform to capture the internet savvy audience.

2.3 Problem Statement

The total number of smartphone users in India is expected to almost double to cross 700 million by 2022, cementing the country's position as the second-largest market for smartphones in the world. One of the key drivers of mobile advertising is the Indian consumer's insatiable appetite for video content, which is expected to constitute 75 percent of the data consumption in the country. The growth is being driven primarily by consumers' ever-increasing hunger for streaming video over the internet, now amplified by the migration of more broadcast and cable TV onto direct-to-consumer over-the-top (OTT) internet delivery networks. Through data, it is predicted for the huge demand in Asia market expected to account for 51% of video streaming by 2024. Though the market capture is very high, however it is a challenge for content delivery due to limited mobile networks. Covid has forced the people to make maximum usage of Internet as the concept of work from home get prominent.

2.4 SCOPE

Television industry has great transformation as Government controlled Door darshan channel over 800 channels in 2018. Star TV initiated first to launch its services in India in 1991. It come out with five television channels as StarPlus, Prime Sports, BBC World, Star Movies, Channel V With this initiative other channels like Zee TV, a General Entertainment channel, founded by local entrepreneur Subhash Chandra Goel entered the market in 1992 (Thomas and Kumar, 2003). By mid-1990, 70 satellite and cable channels started in India.

2.5 Report Structure

1. To pinpoint the features that influence the OTT video streaming.
2. To investigate the impact of smartphone penetration on OTT video streaming
3. To analyze the factor of cost element on user subscription for OTT video streaming.

2.6 Research Motivation

This platform turned out as a major preference for people to spend quality time with family and friends. Pandemic has forced the generation to work from home with a flexible work schedule provided them to enjoy the online streaming services and get engaged with quality content on television or mobiles. This OTT stimulated younger generation more as it is easy to watch on mobile with a great economic package. With the lowest subscription of 199/- rs. Friends can share and experience the delight of their choice. As once you subscribe the package you have no limit on consumption of data. So, youngsters can choose to see with their own options with a single subscription. Moreover, the variables like own convenience in terms of time, choice, rate of subscription, age, no advertisement, one go to complete one series, and many more impacted a lot in the growth of OTT platform. Today the broadcasters have also focused on their own digital platform to capture the internet savvy audience.

3.OTT POPULARITY

It can therefore be concluded from the literature review that the popularity of OTT is on the rise owing to increasing smartphone penetration, competitive internet data plans offered by Indian telecom service providers, the abundance and quality of content on these platforms and the global media industry dynamics that have a sizable impact on the economic and policy matters of OTT service providers. To add to this is the personalized nature of smartphone media and the availability of content from around the globe. Also instrumental is the preference of youth for free and unlimited access to content as opposed to complete content ownership in a limited manner. Thus the consumption of the OTT platforms are thus in huge rise especially among the youth.

The first structured Indian OTT platform was BIGFlix, released by Reliance Entertainment in 2008. In 2010, Digivive released India's first OTT cellular app referred to as nexGTV and it was the first app to live stream Indian Premier League matches on smart telephones and did so through 2013 and 2014. It gained more momentum by the introduction of DittoTV and Sonyliv around 2013. 16 ErosNow was launched in 2012 by Eros International which became much popular. American streaming service Netflix entered India in January 2016. It further registered a Limited Liability Partnership (LLP) and started commissioning content. Amazon Prime Video was launched in 2016. Amazon India launched Amazon Prime Music in February 2018. Star India officially launched Hotstar on 11 February 2015 after fifteen months of development, coinciding with the upcoming 2015 Indian Premier League. In April 2016, Hotstar launched a subscription tier primarily oriented towards international content and the possibility of premium sports content. Voot was launched in March 2016, from the digital arms of Viacom 18. Hoichoi is the first dedicated regional-language OTT service in India. It has launched in 2017 with 30 new shows and 12 original films in Bengali and has acquired about 200 Bengali films and dubbed content from English, Hindi and Arabic. In June 2017, Sun TV Network launched their Sun NXT regional OTT service in Telugu, Tamil, Malayalam, Bengali and Kannada

4 SYSTEM REQUIREMENTS

Windows

- Microsoft® Windows® 7/8/10 64-bit
- 4 GB RAM minimum, 8 GB RAM recommended
- 2 GB of available disk space minimum,
- 4 GB Recommended 500 MB for IDE + 1.5 GB for Android SDK and emulator system image
- 1280 x 800 minimum screen resolution

Mac

- Mac® OS X® 10.10 Yosemite or higher, up to 10.14 macOS Mojave
- 4 GB RAM minimum, 8 GB RAM recommended
- 2 GB of available disk space minimum,
- 4 GB Recommended 500 MB for IDE + 1.5 GB for Android SDK and emulator system image
- 1280 x 800 minimum screen resolution

Linux

- GNOME or KDE desktop - Tested on gLinux based on Debian.
- 64-bit distribution capable of running 32-bit applications
- GNU C Library glibc 2.19 or later 17
- 4 GB RAM minimum, 8 GB RAM recommended
- 2 GB of available disk space minimum

5 METHODOLOGY

5.1 DATA COLLECTION

As we discussed in literature review about current situation of pandemic which is prevailing from last year on different scale made people to choose for the OTT option due to its ease, variety, and quality of contents. The results are being seen in the graph that from last one year as the movement from TV screen to OTT platform and that too preferable with mobile screen.

	A	B	C	D	E	F	G	
	type	title	Date	duration	views	Genres	listed_in	country
1	Movie	Bad Grandpa .5	1-Jan-21	87 min		18002 Dramas, International Movies, Romantic Movies	Documentaries	United States
2	Movie	Case 39	1-Jan-21	111 min		11548 Docuseries, International TV Shows	International TV Shows, TV Dramas, TV Mysteries	South Africa
3	TV Show	Cobra Kai	1-Jan-21	3 Seasons		7227 Comedies, International Movies	Crime TV Shows, International TV Shows, TV Action & Advent	South Africa
4	TV Show	Dream Home Maki	1-Jan-21	2 Seasons		10383 Dramas, International Movies, Music & Musicals	Docuseries, Reality TV	South Africa
5	Movie	Eddie Murphy: Rave	1-Jan-21	90 min		8760 International Movies, Music & Musicals, Thrillers	International TV Shows, Romantic TV Shows, TV Comedies	India
6	Movie	Full Out 2: You Got	1-Jan-21	91 min		12436 Comedies, Dramas, International Movies	TV Dramas, TV Horror, TV Mysteries	India
7	Movie	Gimme Shelter	1-Jan-21	101 min		6950 Comedies, International Movies, Romantic Movies	Children & Family Movies	India
8	Movie	Good Burger	1-Jan-21	96 min		9913 Dramas, International Movies	Dramas, Independent Movies, International Movies	United States, Gh
9	Movie	Good Hair	1-Jan-21	96 min		10081 Comedies, Dramas	British TV Shows, Reality TV	United Kingdom
10	TV Show	Headspace Guide to	1-Jan-21	1 Season		11373 Dramas, Thrillers	Comedies, Dramas	United States
11	Movie	Into the Wild	1-Jan-21	148 min		17003 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, Docuseries, International TV Shows	United States
12	TV Show	Jenni Rivera: Mari	1-Jan-21	1 Season		16837 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, International TV Shows, TV Action & Advent	United States
13	TV Show	London Heist	1-Jan-21	96 min		13459 Crime TV Shows, Spanish-Language TV Shows, TV Action & Adventure	Dramas, International Movies	Germany, Czech f
14	Movie	Mean Girls 2	1-Jan-21	98 min		15182 Crime TV Shows, Spanish-Language TV Shows, TV Action & Adventure	Children & Family Movies, Comedies	Germany, Czech f
15	TV Show	Monarca	1-Jan-21	2 Seasons		6293 Comedies, International Movies	British TV Shows, Crime TV Shows, Docuseries	Germany, Czech f
16	Movie	Mystic Pizza	1-Jan-21	104 min		15778 Dramas, International Movies	TV Comedies, TV Dramas	United States
17	TV Show	Running Man	1-Jan-21	1 Season		15786 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Documentaries, International Movies	United States
18	TV Show	The Cat in the Hat	1-Jan-21	1 Season		16421 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, Spanish-Language TV Shows, TV Dramas	Mexico
19	Movie	The Creative Brain	1-Jan-21	53 min		10979 Stand-Up Comedy	Thrillers	Mexico
20	TV Show	The Haunted Hath	1-Jan-21	2 Seasons		16742 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	International TV Shows, Spanish-Language TV Shows, TV Acti	Mexico
21	Movie	The Minimalists: Le	1-Jan-21	54 min		16370 Documentaries, International Movies, Sports Movies	Crime TV Shows, Docuseries, International TV Shows	Mexico
22	Movie	Unknown	1-Jan-21	113 min		14757 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	International TV Shows, TV Action & Adventure, TV Dramas	Turkey
23	Movie	What Happened to	1-Jan-21	102 min		5325 Documentaries, International Movies	Comedies, International Movies	Turkey
24	Movie	What's Eating Gilb	1-Jan-21	118 min		10701 Dramas, International Movies, Music & Musicals	Children & Family Movies	Turkey
25	Movie	Asphalt Burning	2-Jan-21	101 min		8098 Dramas, International Movies, Romantic Movies	Comedies, International Movies, Romantic Movies	India
26	Movie	Playing for Keeps	3-Jan-21	106 min		12126 Horror Movies, International Movies	Docuseries, International TV Shows, Reality TV	Australia
27	Movie	Hello Brother	4-Jan-21	126 min		18833 Comedies, Independent Movies, International Movies	Comedies, International Movies, Music & Musicals	Australia
28	TV Show	Korean Pork Belly f	4-Jan-21	1 Season		14689 Comedies, Dramas, Independent Movies	Comedies	United States
29	TV Show	QB1: Beyond the Li	4-Jan-21	1 Season		9530 Dramas, International Movies, Romantic Movies	Horror Movies, Sci-Fi & Fantasy	United States

5.2 DATA MINING

In this section, there is an overview of the process of data mining and data modeling, collecting the data, through the data preparation and finally the data modeling. Data cleaning and formatting can be considered as the most critical part of the whole project according to several data scientists. Figure shows how the process of data mining works to extract knowledge using algorithms.

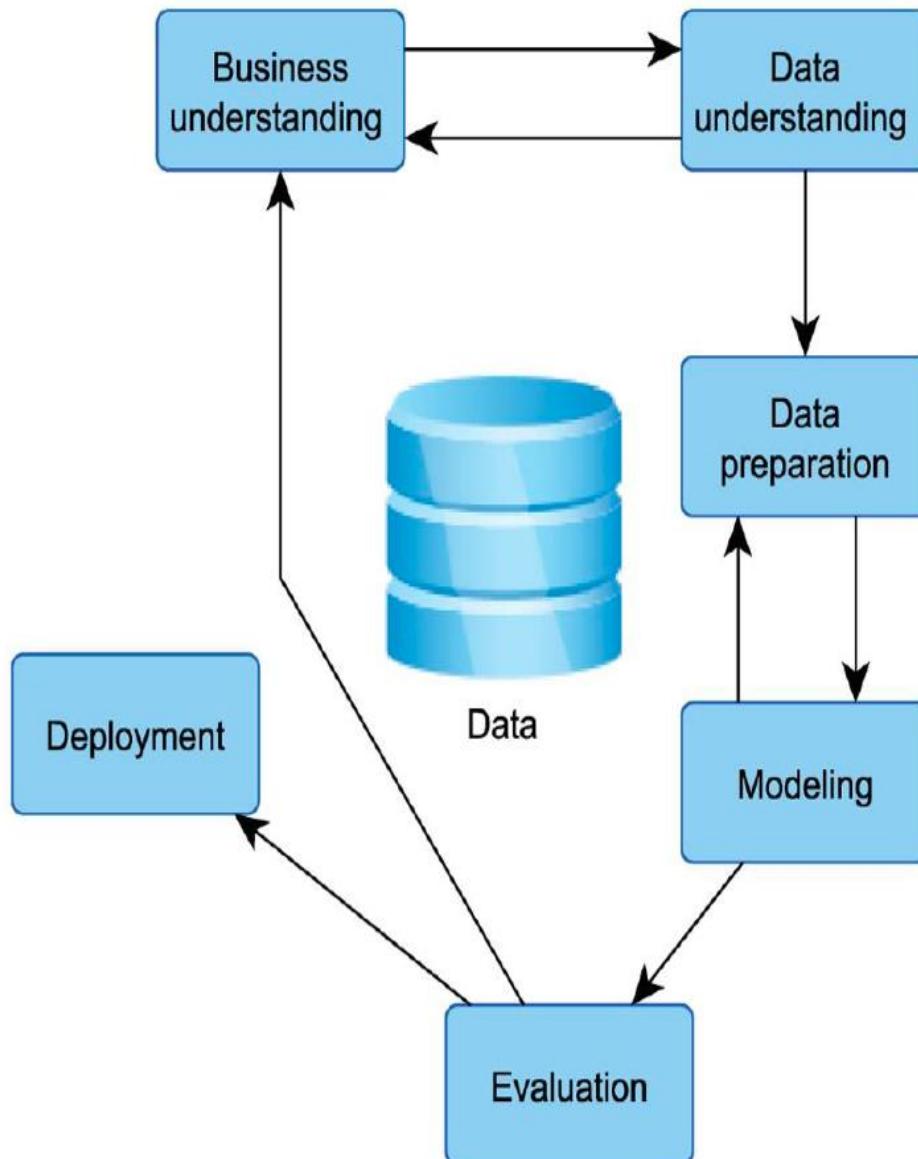


FIGURE 5.1 : DATA MINING

5.3 DATA ANALYSIS

The process of data analysis, or alternately, data analysis steps, involves gathering all the information, processing it, exploring the data, and using it to find patterns and other insights. The process of data analysis consists of: Data Requirement Gathering: Ask yourself why you're doing this analysis, what type of data you want to use, and what data you plan to analyze.

Data Collection: Guided by your identified requirements, it's time to collect the data from your sources. Sources include case studies, surveys, interviews, questionnaires, direct observation, and focus groups. Make sure to organize the collected data for analysis. Data Cleaning: Not all the data you collect will be useful, so it's time to clean it up. This process is where you remove white spaces, duplicate records, and basic errors. Data cleaning is mandatory before sending the information on for analysis.

Data Analysis: Here is where you use data analysis software and other tools to help you interpret and understand the data and arrive at conclusions. Data analysis tools include Excel, Python, R, Looker, Rapid Miner, Charito, Meta base, Rehash, and Microsoft Power BI. Data Interpretation: Now that you have your results, you need to interpret them and come up with the best courses of action based on your findings.

Data Visualization: Data visualization is a fancy way of saying, "graphically show your information in a way that people can read and understand it." You can use charts, graphs, maps, bullet points, or a host of other methods. Visualization helps you derive valuable insights by helping you compare datasets and observe relationships.

If you want to make informed decisions, you need data, but there's more to it. The data in question must be accurate. Data analysis helps businesses acquire relevant, accurate information, suitable for developing future marketing strategies, business plans, and realigning the company's vision or mission. A simple example of data analysis can be seen whenever we make a decision in our daily lives by evaluating what has happened in the past or what will happen if we make that decision. Basically, this is the process of analyzing the past or future and making a decision based on that analysis.

5.4 TYPES OF DATA ANALYSIS

The four types of data analysis are:

- Descriptive Analysis
- Diagnostic Analysis
- Predictive Analysis
- Prescriptive Analysis

5.4.1 DESCRIPTIVE ANALYSIS

Descriptive analytics answer the question, “What happened?”. This type of analytics is by far the most commonly used by customers, providing reporting and analysis centered on past events. It helps companies understand things such as:

- How much did we sell as a company?
- What was our overall productivity?
- How many customers churned in the last quarter?

Descriptive analytics is used to understand the overall performance at an aggregate level and is by far the easiest place for a company to start as data tends to be readily available to build reports and applications. It’s extremely important to build core competencies first in descriptive analytics before attempting to advance upward in the data analytics maturity model. Core competencies include things such as data modeling fundamentals, communicating data with right visualization and basic dashboard skills.

It’s likely you’ve adopted some form of descriptive analytics internally, whether that be static P&L statements, PDF reports, or reporting within an analytics tool. For a true descriptive analytics program to be implemented, the concepts of repeatability and automation of tasks must be top of mind. Repeatability in that a data process is standardized and can be regularly applied with minimal effort (think a weekly sales report), and automation in that complex tasks (VLOOKUPS, merging of excel spreadsheets, etc.) are automated—requiring little to no manual intervention.

5.4.2 DIAGNOSTIC ANALYSIS

Diagnostic analytics, just like descriptive analytics, uses historical data to answer a question. But instead of focusing on “what”, diagnostic analytics addresses the critical question of why an occurrence or anomaly occurred within your data. Diagnostic analytics also happens to be the most overlooked and skipped step within the analytics maturity model. Anecdotally, I see most customers attempting to go from “what happened” to “what will happen” without ever taking the time to address the “why did it happen” step. This type of analytics helps companies answer questions such as:

- Why did our company sales decrease in the previous quarter?
- Why are we seeing an increase in customer churn?
- Why is a specific basket of products vastly outperforming their prior year sales figures?

Diagnostic analytics tends to be more accessible and fit a wider range of use cases than machine learning/predictive analytics. You might even find that it solves some business problems you earmarked for predictive analytics use cases. Being at the diagnostic analytics phase likely means you’ve adopted a modern analytics tool. Most modern analytics tools contain a variety of search-based, or lightweight artificial intelligence capabilities.

These features allow for detailed insights a layer deeper (for example: the Key Drivers visualization in Power BI, or Qlik’s search-based insight functionality). To be clear, these are an effective lightweight means to address diagnostic analytics use cases but are not a means to a full-scale implementation. Software vendors like Sisuu have built their core business around addressing diagnostic analytics use cases (what they call “augmented analytics”) and are a great bet. Diagnostic analytics is an important step in the maturity model that unfortunately tends to get skipped or obscured. If you cannot infer why your sales decreased 20% in 2020, then jumping to predictive analytics and trying to answer “what will happen to sales in 2021” is a stretch in advancing upward in the analytics maturity model.

5.4.3 PREDICTIVE ANALYSIS

Predictive analytics is a form of advanced analytics that determines what is likely to happen based on historical data using machine learning. Historical data that comprises the bulk of descriptive and diagnostic analytics is used as the basis of building predictive analytics models. Predictive analytics helps companies address use cases such as:

- Predicting maintenance issues and part breakdown in machines.
- Determining credit risk and identifying potential fraud.
- Predict and avoid customer churn by identifying signs of customer dissatisfaction.
- At the outset of any predictive analytics build, three core elements need to be established:
 - Identify a problem to solve,
 - Define what is you want to predict, and
 - State what you will achieve by doing so.

To start you should collect existing data, organize data in a useful way to allow for data modeling, cleanse your data and review overall quality, and finally determine your modeling objective. While modeling takes up the spotlight in predictive analytics, data prep is a crucial step that needs to happen first. This is why organizations with a rock-solid foundation in descriptive and diagnostic analytics are better equipped to handle predictive analytics. Simply put, the time and effort to prep, transform, and ensure data quality for retrospective reporting has already taken place. The groundwork should be relatively well laid to quickly identify and leverage data for the modeling phase. I always encourage customers with well-defined KPIs and business logic in a specific business reporting area (think sales reporting for example) to use that as the first predictive analytics use case. The goal is to derive value quickly, and there is no better place to start than an area where you know data is well defined and of high quality.

5.4.4 PRESCRIPTIVE ANALYSIS

Prescriptive analytics is the fourth and final pillar of modern analytics. Prescriptive analytics pertains to true guided analytics where your analytics is prescribing or guiding you toward a specific action to take. It is effectively the merging of descriptive, diagnostic, and predictive analytics to drive decision making. Existing scenarios or conditions (think your current fleet of freight trains) and the ramifications of a decision or occurrence (parts breakdown on the freight trains) are applied to create a guided decision or action for the user to take (proactively buy more parts for preventative maintenance).

Prescriptive analytics requires strong competencies in descriptive, diagnostic, and predictive analytics which is why it tends to be found in highly specialized industries (oil and gas, clinical healthcare, finance, and insurance to name a few) where use cases are well defined. Prescriptive analytics help to address use cases such as:

- Automatic adjustment of product pricing based on anticipated customer demand and external factors.
- Flagging select employees for additional training based on incident reports in the field.

Prescriptive analytics' primary aim is to take the educated guess or assessment out of data analytics and streamline the decision-making process. Prescriptive analytics is commonly considered the merging of descriptive, diagnostic, and predictive analytics. Getting started isn't so much a step-by-step list but rather the time and effort up front to build your competencies within the analytics maturity curve.

Simply put, there is no starting point in prescriptive analytics without the requisite first three pillars of modern analytics being established first. If you're ready for prescriptive analytics, then quantifying your call to action and the underlying criteria will be the first requirement. For example: if the use case is to call corrective action for an employee (i.e. – additional training based on poor performance) then the factors that necessitate this action must be firmly established and the action itself must be clearly defined. Knowing how each kind of analytics helps you better understand your data and how to use it.

5.5 POWER BI

Microsoft Power BI is a business intelligence (BI) platform that provides nontechnical business users with tools for aggregating, analyzing, visualizing and sharing data. Power BI's user interface is fairly intuitive for users familiar with Excel, and its deep integration with other Microsoft products makes it a versatile self-service tool that requires little upfront training.

Users can download an application for Windows 10, called Power BI Desktop, and native mobile apps for Windows, Android and iOS devices. There is also Power BI Report Server for companies that must maintain their data and reports on premises. That version of Power BI requires a special version of the desktop app -- aptly called Power BI Desktop for Power BI Report Server.

5.5.1 USES OF POWER BI

Microsoft Power BI is used to find insights within an organization's data. Power BI can help connect disparate data sets, transform and clean the data into a data model and create charts or graphs to provide visuals of the data. All of this can be shared with other Power BI users within the organization.

The data models created from Power BI can be used in several ways for organizations, including the following:

- telling stories through charts and data visualizations;
- examining "what if" scenarios within the data; and
- creating reports that can answer questions in real time and help with forecasting to make sure departments meet business metrics.

Power BI can also provide executive dashboards for administrators or managers, giving management more insight into how departments are doing.

5.5.2 FEATURES OF POWER BI

Microsoft has added a number of data analytics features to Power BI since its inception and continues to do so. Some of the most important features are the following:

Artificial intelligence. Users can access image recognition and text analytics in Power BI, create machine learning models using automated ML capabilities and integrate with Azure Machine Learning.

Hybrid deployment support. This feature provides built-in connectors that allow Power BI tools to connect with a number of different data sources from Microsoft, Salesforce and other vendors.

Quick Insights. This feature allows users to create subsets of data and automatically apply analytics to that information.

Common data model support. Power BI's support for the common data model allows the use of a standardized and extensible collection of data schemas (entities, attributes and relationships).

Cortana integration. This feature, which is especially popular on mobile devices, allows users to verbally query data using natural language and access results using Cortana, Microsoft's digital assistant.

Customization. This feature allows developers to change the appearance of default visualization and reporting tools and import new tools into the platform.

APIs for integration. This feature provides developers with sample code and application program interfaces (APIs) for embedding the Power BI dashboard in other software products.

Self-service data prep. Using Power Query, business analysts can ingest, transform, integrate and enrich big data into the Power BI web service. Ingested data can be shared across multiple Power BI models, reports and dashboards.

Modeling view. This allows users to divide complex data models by subject area into separate diagrams, multiselect objects and set common properties, view and modify properties in the properties pane, and set display folders for simpler consumption of complex data models.

5.6 ARCHITECTURE

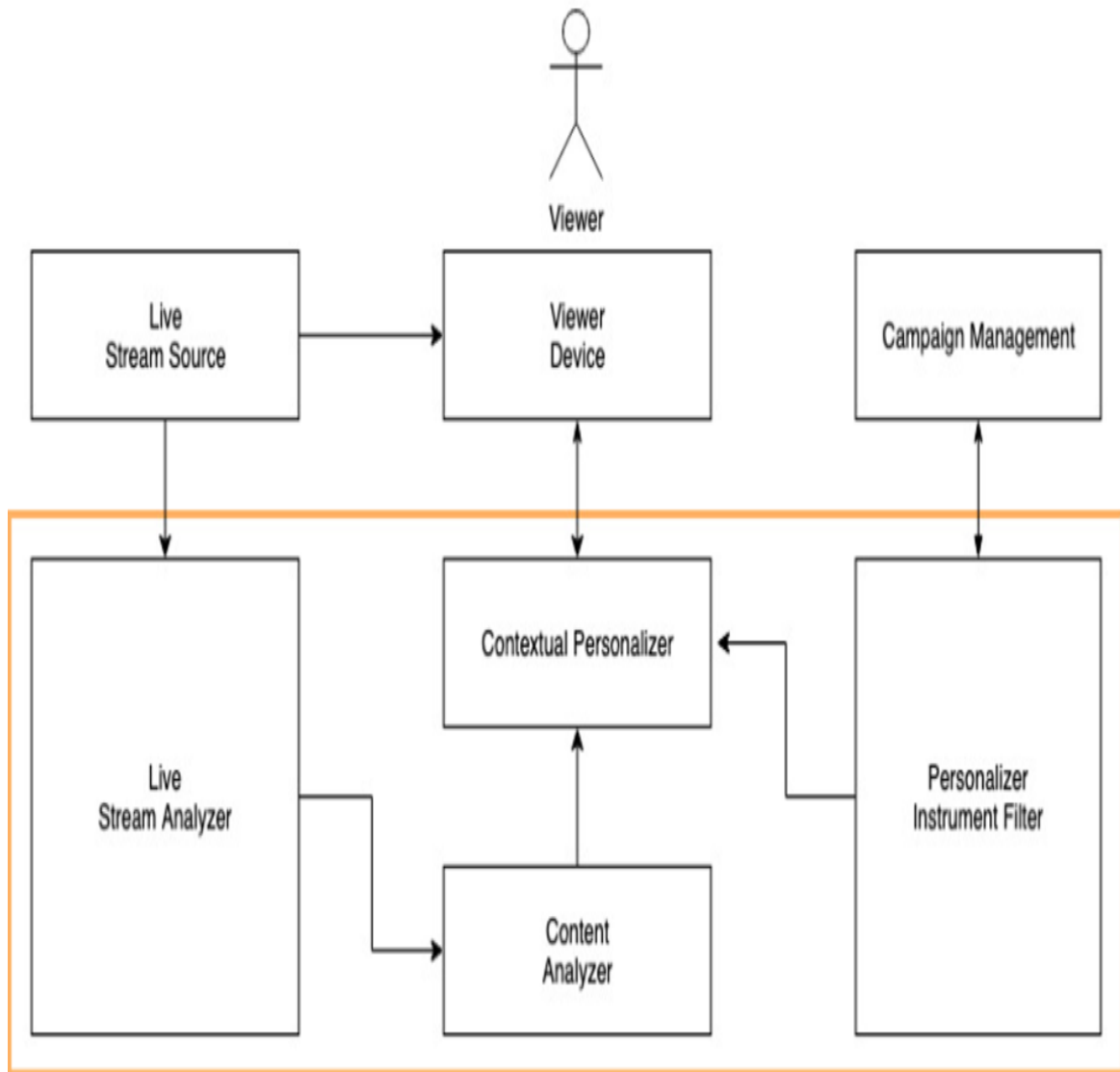


FIGURE 5.2 : ARCHITECTURE

5.7 PROJECT IMPLEMENTATION

The project is implemented in Microsoft excel and Microsoft power Bi. The Microsoft excel is used to collect the data and form the data's into the table. Microsoft power bi is used to analyze and transform the raw data into an analyzable format.

We need to collect the datasets for price of various currencies. We need to collect the INR price of USD,EURO,POUND,NZD,MYR,AUD,SGD etc.,

The dataset includes;

- Exchange rates of currency of one year
- Increasing rate of currencies every month

Now enter the dataset in Microsoft excel sheet as per the date and month. Next one is the main objective of the project that is outcome of currency exchange.

The value of currency exchange rate depends on various factor namely:

- Current value
- Current High
- Current Low
- Rate of increase
- Rate of decrease

Now collect the dataset of these values for all the currencies. Import to the excel sheet. These data's are taken for the currencies such as us dollar, European currency, Indian rupee, pound, Singapore dollar, Sri Lankan rupee, Australian dollar, Chinese yuan etc.,

Then import the excel sheet into the Microsoft power bi.

The following diagram shows the datasets taken

A	B	C	D	E	F	G		
1	type	title	Date	duration	views	Genres	listed_in	country
2	Movie	Bad Grandpa 5	1-Jan-21	87 min		18002 Dramas, International Movies, Romantic Movies	Documentaries	United States
3	Movie	Case 39	1-Jan-21	111 min		11548 Docuseries, International TV Shows	International TV Shows, TV Dramas, TV Mysteries	South Africa
4	TV Show	Cobra Kai	1-Jan-21	3 Seasons		7227 Comedies, International Movies	Crime TV Shows, International TV Shows, TV Action & Adventure	South Africa
5	TV Show	Dream Home Makeover	1-Jan-21	2 Seasons		10383 Dramas, International Movies, Music & Musicals	Docuseries, Reality TV	South Africa
6	Movie	Eddie Murphy: Raw	1-Jan-21	90 min		8760 International Movies, Music & Musicals, Thrillers	International TV Shows, Romantic TV Shows, TV Comedies	India
7	Movie	Full Out 2: You Got It	1-Jan-21	91 min		12436 Comedies, Dramas, International Movies	TV Dramas, TV Horror, TV Mysteries	India
8	Movie	Gimme Shelter	1-Jan-21	101 min		6950 Comedies, International Movies, Romantic Movies	Children & Family Movies	India
9	Movie	Good Burger	1-Jan-21	96 min		9913 Dramas, International Movies	Dramas, Independent Movies, International Movies	United States, Ghana
10	Movie	Good Hair	1-Jan-21	96 min		10081 Comedies, Dramas	British TV Shows, Reality TV	United Kingdom
11	TV Show	Headspace Guide to Mindfulness	1-Jan-21	1 Season		11373 Dramas, Thrillers	Comedies, Dramas	United States
12	Movie	Into the Wild	1-Jan-21	148 min		17003 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, Docuseries, International TV Shows	United States
13	TV Show	Jenni Rivera: Mariposa	1-Jan-21	1 Season		16837 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, International TV Shows, TV Action & Adventure	United States
14	Movie	London Heist	1-Jan-21	96 min		13459 Crime TV Shows, Spanish-Language TV Shows, TV Action & Adventure	Dramas, International Movies	Germany, Czech Republic
15	Movie	Mean Girls 2	1-Jan-21	98 min		15182 Crime TV Shows, Spanish-Language TV Shows, TV Action & Adventure	Children & Family Movies, Comedies	Germany, Czech Republic
16	TV Show	Monarca	1-Jan-21	2 Seasons		6293 Comedies, International Movies	British TV Shows, Crime TV Shows, Docuseries	Germany, Czech Republic
17	Movie	Mystic Pizza	1-Jan-21	104 min		15778 Dramas, International Movies	TV Comedies, TV Dramas	United States
18	TV Show	Running Man	1-Jan-21	1 Season		15786 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Documentaries, International Movies	United States
19	TV Show	The Cat in the Hat: The Purrfect Couple	1-Jan-21	1 Season		16421 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	Crime TV Shows, Spanish-Language TV Shows, TV Dramas	Mexico
20	Movie	The Creative Brain	1-Jan-21	53 min		10979 Stand-Up Comedy	Thrillers	Mexico
21	TV Show	The Haunted Hathings	1-Jan-21	2 Seasons		16742 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	International TV Shows, Spanish-Language TV Shows, TV Action & Adventure	Mexico
22	Movie	The Minimalists: Live	1-Jan-21	54 min		16370 Documentaries, International Movies, Sports Movies	Crime TV Shows, Docuseries, International TV Shows	Mexico
23	Movie	Unknown	1-Jan-21	113 min		14757 Crime TV Shows, International TV Shows, Spanish-Language TV Shows	International TV Shows, TV Action & Adventure, TV Dramas	Turkey
24	Movie	What Happened to Us	1-Jan-21	102 min		5325 Documentaries, International Movies	Comedies, International Movies	Turkey
25	Movie	What's Eating Gilbert	1-Jan-21	118 min		10701 Dramas, International Movies, Music & Musicals	Children & Family Movies	Turkey
26	Movie	Asphalt Burning	2-Jan-21	101 min		8098 Dramas, International Movies, Romantic Movies	Comedies, International Movies, Romantic Movies	India
27	Movie	Playing for Keeps	3-Jan-21	106 min		12126 Horror Movies, International Movies	Docuseries, International TV Shows, Reality TV	Australia
28	Movie	Hello Brother	4-Jan-21	126 min		18833 Comedies, Independent Movies, International Movies	Comedies, International Movies, Music & Musicals	Australia
29	TV Show	Korean Pork Belly	4-Jan-21	1 Season		14689 Comedies, Dramas, Independent Movies	Comedies	United States
30	TV Show	QBI: Beyond the Limits	4-Jan-21	1 Season		9530 Dramas, International Movies, Romantic Movies	Horror Movies, Sci-Fi & Fantasy	United States

FIGURE 5.3 : DATASET 1

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
date	number of movies	movie views	number of series	series views	total views												
1/1/2022	20	55770	16	184352	240122												
1/2/2022	29	145817	22	64814	210631												
1/3/2022	7	84315	7	194147	278462												
1/4/2022	8	169073	25	177119	346192												
1/5/2022	19	70449	8	189633	260082												
1/6/2022	28	100924	17	59621	160545												
1/7/2022	15	153688	18	118683	272371												
1/8/2022	22	123487	20	136596	260083												
1/9/2022	12	96096	14	99723	195819												
1/10/2022	6	171173	24	136105	307278												
1/11/2022	9	137661	22	142102	279763												
1/12/2022	4	118801	17	150721	269522												
1/13/2022	13	185900	15	74085	259985												
1/14/2022	22	177421	7	172715	350136												
1/15/2022	9	65665	22	178456	244121												
1/16/2022	5	77442	12	78140	155582												
1/17/2022	7	58058	17	76110	134168												
1/18/2022	17	134486	17	64823	199309												
1/19/2022	22	89629	11	137450	227079												
1/20/2022	15	125007	10	138229	263236												
1/21/2022	13	196990	20	108989	305979												
1/22/2022	12	113692	14	189632	303324												
1/23/2022	18	100225	19	183627	283852												
1/24/2022	14	55173	19	190542	245715												
1/25/2022	5	155089	5	165489	320578												
1/26/2022	7	195858	16	146968	342826												
1/27/2022	9	117433	6	106913	224346												
1/28/2022	5	163894	10	169247	333141												
1/29/2022	12	91554	10	107564	199118												

FIGURE 5.4 : DATASET 2

6 RESULTS AND DISCUSSION

As a first exploratory examination, we consider the watched likelihood of deferral in minutes on the whole dataset. The best path is through a histogram and graphs.

6.1 PREDICTION

Predictive analytics is a form of advanced analytics that determines what is likely to happen based on historical data using machine learning. Historical data that comprises the bulk of descriptive and diagnostic analytics is used as the basis of building predictive analytics models. Predictive analytics helps companies address use cases such as:

- Predicting maintenance issues and part breakdown in machines.
- Determining credit risk and identifying potential fraud.
- Predict and avoid customer churn by identifying signs of customer dissatisfaction.

At the outset of any predictive analytics build, three core elements need to be established:

- Identify a problem to solve,
- Define what is you want to predict, and
- State what you will achieve by doing so.

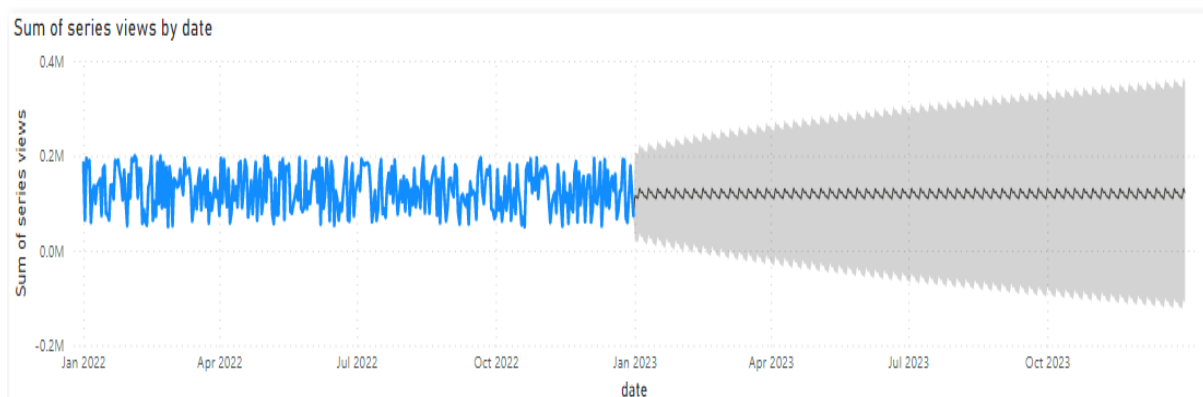


FIGURE 6.1 : PREDICTION TABLE

6.2 Q & A:

A report designer can add a specific type of interactive visual called the Q&A visual. Power BI report end users can ask natural language questions and create a new report visual that represents the answer to the question. The Q&A visual behaves like any other visual in a report. Cross-filter, cross-highlight, bookmarks, and comments are enabled.

Q&A visuals have a question box across the top of the visual. You type your question into the question box and Q&A responds with a visual. The Q&A visual can be used over and over again to ask questions about your data. When you leave the report, the Q&A visual resets to its default.

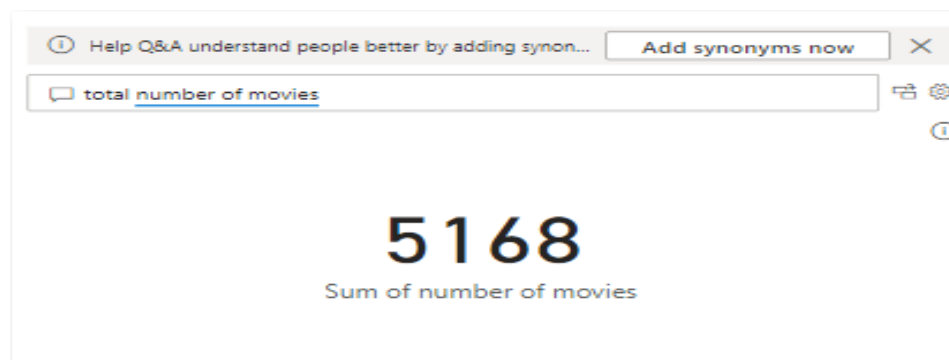


FIGURE 6.2 : Q&A

- Q&A feature lets you explore your data or query your data in your own words
- The smart narrative visualization helps you provide a quick text summary of visuals & reports

The Q&A feature in Power BI lets you explore your data in your own words by using natural language. Q&A is interactive, even fun. Often, one question leads to others as the visualizations reveal interesting paths to pursue. Asking the question is just the beginning.

6.3 SMART NARRATIVE:

The smart narrative visualization helps you provide a quick text summary of visuals and reports. It provides relevant innovative insights that you can customize. Use smart narrative summaries in your reports to address key takeaways, to point out trends, and to edit the language and format for a specific audience

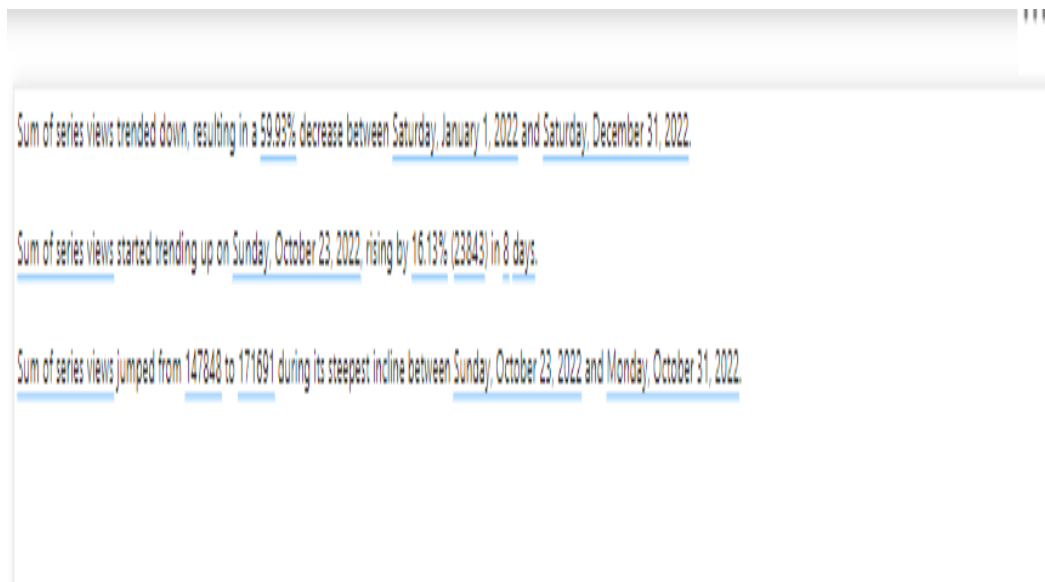


FIGURE 6.3 : SMART NARRATIVE

- Q&A feature lets you explore your data or query your data in your own words
- The smart narrative visualization helps you provide a quick text summary of visuals & reports

You see a narrative that's based on all of the visuals on the page. For example, in the sample file, smart narratives can automatically generate a summary of the report's visuals that address revenue, website visits, and sales. Power BI automatically analyzes trends to show that revenue and visits have both grown. It even calculates growth, which in this case is 72 percent. Sometimes a hidden-summary symbol appears in the smart narrative. It indicates that current data and filters produce no result for the value. A summary is empty when no insights are available.

6.4MONTH PREDICTION

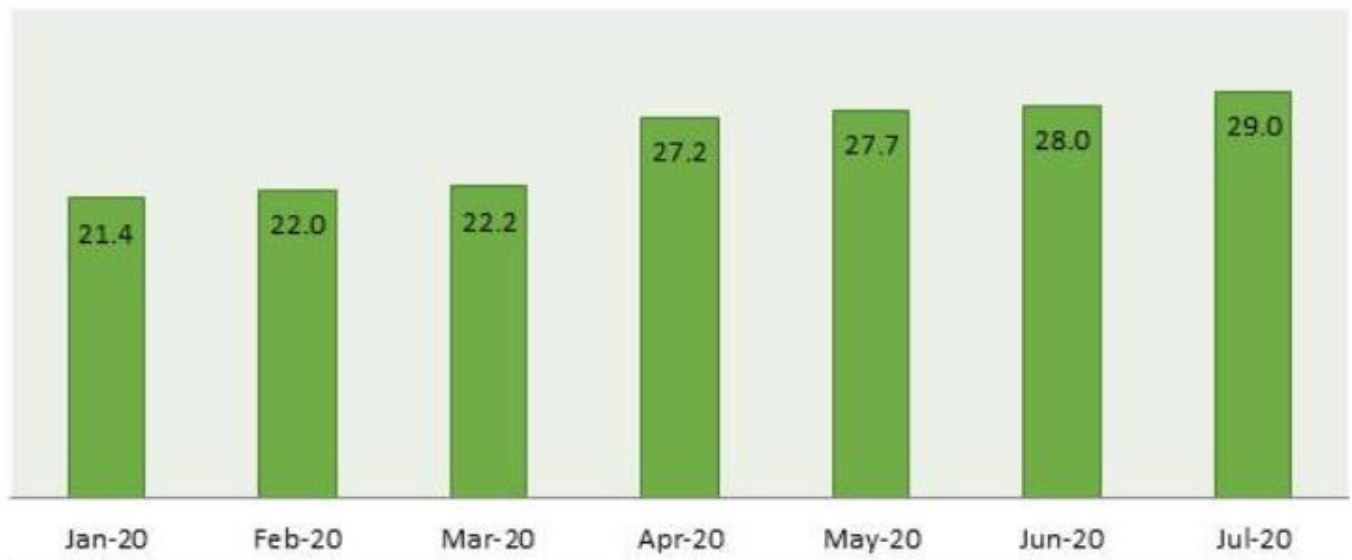


Figure (iv) : MONTH BY PREDICTION

Understanding OTT

Over the top (OTT) refers to film and television content provided via a high-speed Internet connection rather than a cable or satellite provider. Viewers who dislike paying for bundled content are often referred to as cord cutters. The providers of these contents are referred to as OTT platforms. Common examples of OTT platforms popular in India are Netflix, Amazon prime, Disney+hotstar, HBO now, Sonyliv, Zee5, Voot, Hulu, ErosNow etc.

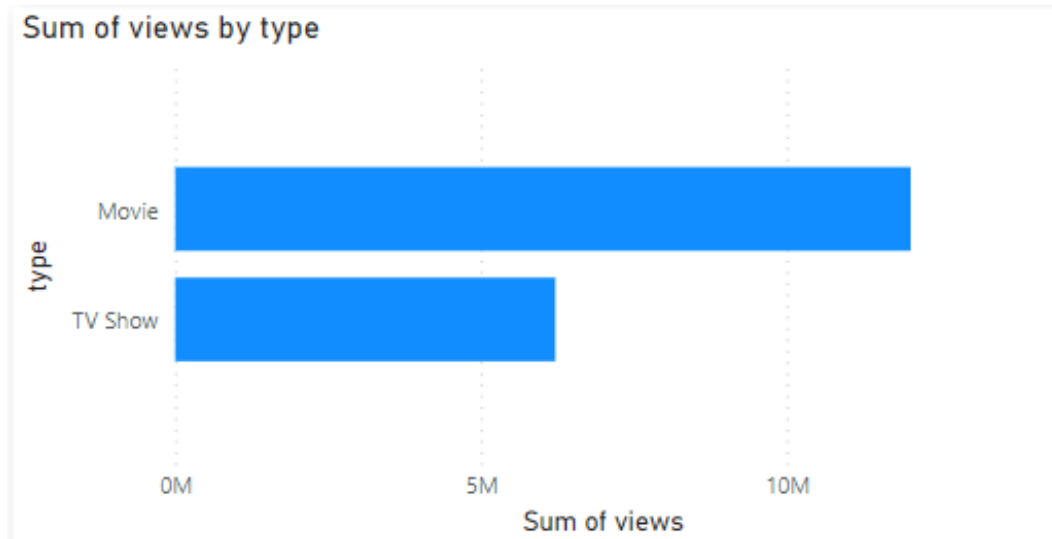
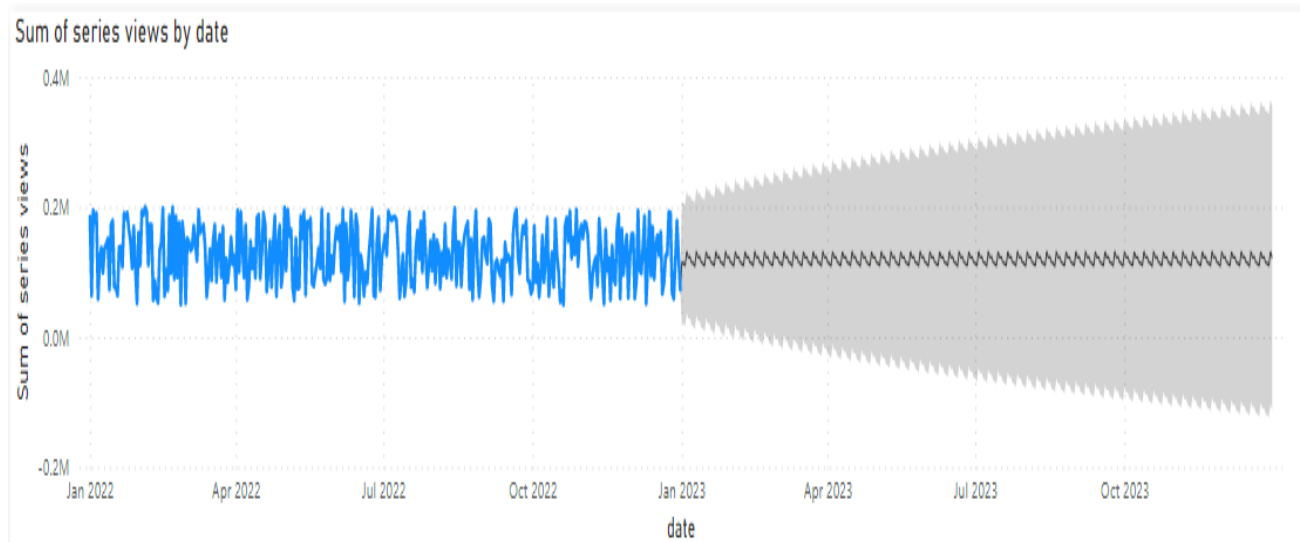


Figure (v): TYPE BY VIEWS

This means that OTT is set to benefit from the closure of cinemas, as some film studios choose to fast-track new releases to home video platforms. The trend of digital first releases is also catching up in the five southern states, which is a significant segment of box office collection revenues in the country.

6.5 SUM OF SERIES VIEWS BY DATE



Figure(vi): sum of views

Consumption of OTT platforms heavily relied on the availability of devices that are compatible with online video viewing.

The Smartphone is the preferred videostreaming device in India. In February 2019, nearly 144 million people spent a total of 362 million hours on an OTT platform as per the reports of Gevers, 2019

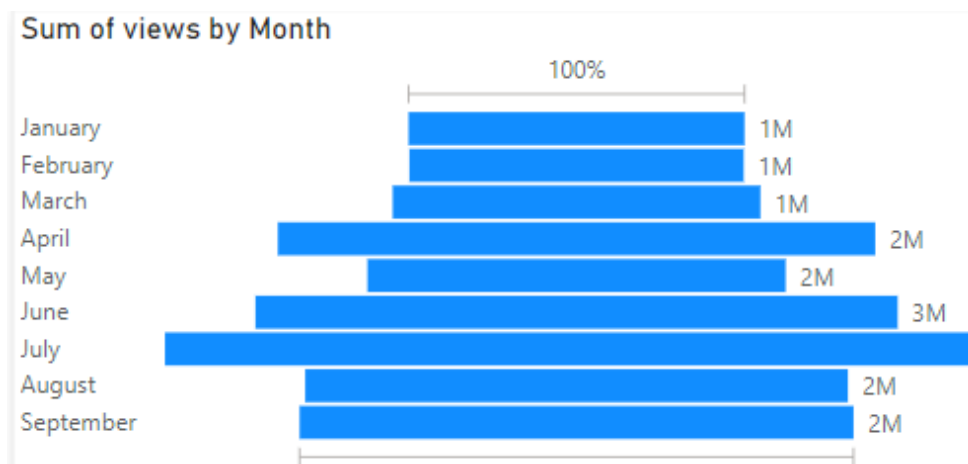


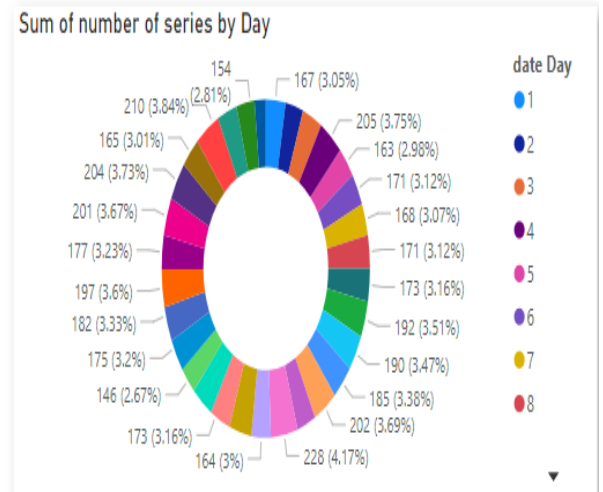
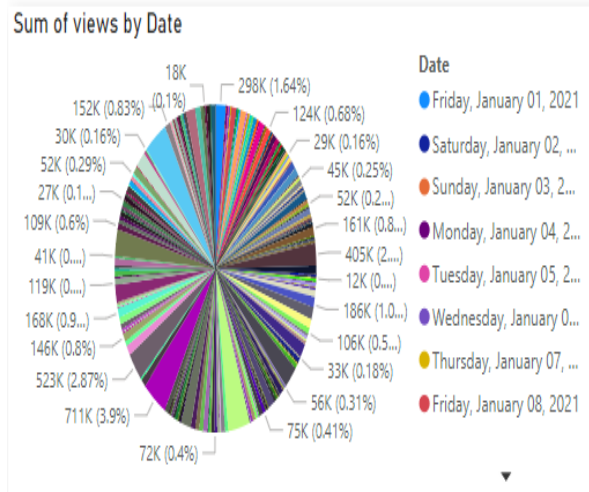
Figure (vii): views by month

It is an American over-the-top content platform and production company headquartered in Los Gatos, California. Netflix was founded in 1997. The company's primary business is a subscription-based streaming service offering online streaming from a library of films and television series. In January 2021, Netflix reached 203.7 million subscribers.

In India, at present the OTT user-base is dominated by Disney+ Hotstar, Amazon Prime Video and Netflix. However, there are several production house-backed local OTT players, such as SonyLIV, Voot, Zee5, ErosNow and ALTBalaji, which are competing with these global players and trying to make a mark in the industry.

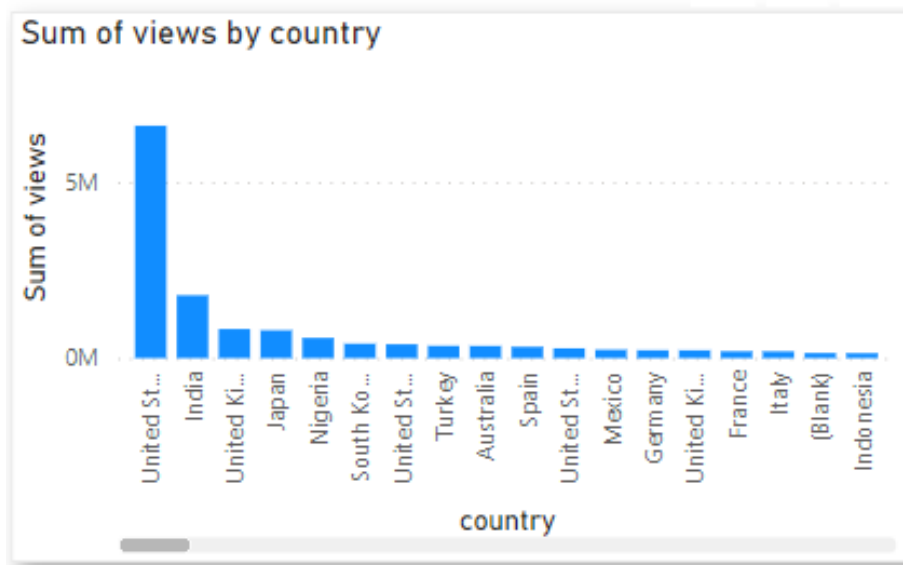
This means that OTT is set to benefit from the closure of cinemas, as some film studios choose to fast-track new releases to home video platforms. The trend of digital first releases is also catching up in the five southern states, which is a significant segment of box office collection revenues in the country.

6.7 . sum of views by date



Movies and web series are the most watched on OTT among the youth, which are preferred due to the availability of the original content, which are free from censorship. The government's plan to impose censorship on the contents of OTT platforms would have a drastic effect, as most of the users prefer to watch original content - which are unavailable on theatres and other platforms. Most youth are also against the imposition of censorship.

6.8 . Total views by Months



Figure(xi)

With enhanced networks, stronger internet connectivity and multimedia service-capable mobiles, the presence of Indian subscribers on over-the-top (OTT) platforms is increasing day by day. This boost in the OTT consumption in India can be attributed to the addition of new subscribers emerging from Tier I and from Tier II cities; is also drawing attention of all media and entertainment houses. With the rising demand, many media and entertainment channels have launched their own platforms or are trying to collaborate with other platforms to stream their content.

6.10 SUM OF MOVIE VIEWS

The study is intended to analyze the impact of various attributes such as each of access and variety of content in the growth of OTT platform, international exposure, price sensitivity and its effect on high usage of OTT among consumers. The study has supported the primary research approach by survey. The survey was online and spread through social media such as whatsapp, Email and LinkedIn. The sample size for the survey is 200. More usage of OTT platform was chosen as independent variable. Cost, ease of access, variety of content, international content exposure, user friendliness, price sensitivity and OTT usage on mobile over TV is more etc. independent variables chosen for analysis. The study has focused on various factors such as ease of access, variety of content, significant usage of Netflix, cost etc. and their effect on OTT platform. Statical tests such as Anova & correlation are used to find out the relationship between usage of OTT platform and different abovesaid variables and usage of OTT on mobile compared to television. Chi square test is applied to find out the relationship between demographic variables

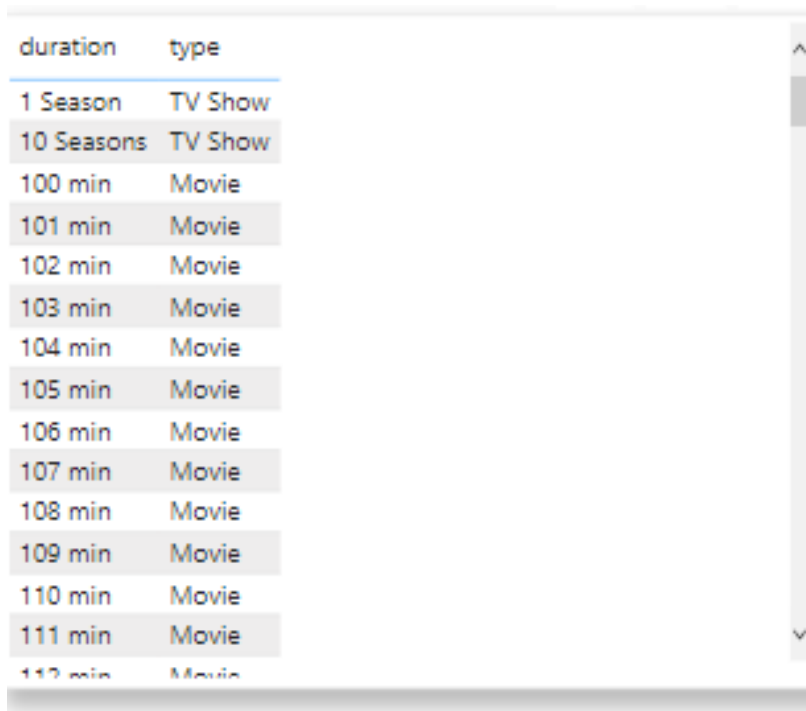


45M

Sum of movie views

6.11 DURATION BY TYPE

Diagnostic analytics, just like descriptive analytics, uses historical data to answer a question. But instead of focusing on “what”, diagnostic analytics addresses the critical question of why an occurrence or anomaly occurred within your data. Diagnostic analytics also happens to be the most overlooked and skipped step within the analytics maturity model. Anecdotally, I see most customers attempting to go from “what happened” to “what will happen” without ever taking the time to address the “why did it happen” step.



duration	type
1 Season	TV Show
10 Seasons	TV Show
100 min	Movie
101 min	Movie
102 min	Movie
103 min	Movie
104 min	Movie
105 min	Movie
106 min	Movie
107 min	Movie
108 min	Movie
109 min	Movie
110 min	Movie
111 min	Movie
112 min	Movie

FIGURE 6.12 DURATION BY TYPE

6.13 CONCLUSION

The research paper concludes the user friendliness and content richness as significant factors in the usage and promotion of OTT platform. Price sensitivity matters a lot to individuals. Cost effect makes the platform stronger than usual. It brings cost sensitivity to users and encourages to the platform. Life with ease, own comfort, and satisfaction brings the individuals closure to the OTT platform. Programme with own choice, time, location, duration makes possible everything with mobile phones. Mobile phone makes it easy to use this platform. It brings the control of an individual in all respects. Talking about millennials to some extent and zen z, peer pressure, or as a status in society or better positions among friends does not force them to make an extensive usage of OTT. The research study also concludes with the demand for Netflix is comparatively greater. Exposure to the international content, and trends as well the other factors that influence the audiences to the platform

It is quite evident that the arrival of COVID-19 pandemic has aided the OTT platform with the increased consumption of these by the youth and OTT becoming the most preferred medium. The major benefits incurred from the OTT platforms are the flexibility of usage, availability of cross-cultural & worldwide entertainment and subscription to the user-friendly unlimited content. Also vital are factors like increasing penetration of smartphones and availability of internet data at competitive prices in India. Movies and web series are the most watched on OTT among the youth, which are preferred due to the availability of the original content, which are free from censorship. The government's plan to impose censorship on the contents of OTT platforms would have a drastic effect, as most of the users prefer to watch original content - which are unavailable on theatres and other platforms. Most youth are also against the imposition of censorship.

6.15 .Future work

The study can be wider based on Zen z dataset. It can bring in the psychological angle in discussion as Zen z is more inclined to technology that brings luxury to life. The biggest user of mobile phone at the current point of time is this younger generation. So different psychological factors can reflect on the usage of OTT by Zen z. Future studies can make comparative comparison as well in the generation and their inclination towards the OTT platform. This study is more focused on urban sample so separate finding may be researched and discussed on rural population and its inclination towards OTT.

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