OTT PLATFORM ANALYSIS TOOL

A UG Project Phase-1 Report

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

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CERTIFICATE OF COMPLETION UG PROJECT PHASE-1

This is to certify that the UG Project Phase-1 report entitled **"OTT PLATFORM ANALYSIS TOOL"** is being submitted by **SUJANA SRI CHIDARA (19UK5A0511), JUVERIA SHAISTA (17UK1A0567), MD GULAM MUSTAFA (19UK5A0521),** in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology in Computer Science & Engineering to Jawaharlal Nehru Technological University Hyderabad during the academic year 2021-2022.

Project Guide **HOD**

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ABSTRACT

In recent years, the advent of various OTT platforms has introduced a novel issue: the difficulty in choosing which OTT platform to subscribe to. Netflix, amazon prime, and disney+ are some of the many OTT services that are well-known to the public, but the number of services is growing as localized OTT platforms like watcha (southkorea) and voot (india) are joining the line.

As these platforms are coming up with new ways to stand out among competitors by presenting original content, it is evident that more customers are being lost in deciding which platform would be suitable for their use. Moreover, most of the available recommendation systems are focused on suggesting the content but not the platforms that hold and provide those contents. To ease the choice dilemma, our study aims to present a guideline for choosing the appropriate OTT platform that fits one's personal preferences. Therefore, it is the right time to analyze different OTT platforms and provide useful information for people who are not able to decide which platform fits them best.

1. INTRODUCTION

Traditionally, the consumption of movies and other audio and video content has always been in the form of mediums like theatre and television. As the technology developed, it was easily accessible at home and whenever required with the introduction of VHS, DVDs, Blu-rays and disc rental services. Further, cable television brought the content through Co-axial cables and fibre optic cables. Another better service emerged as Direct-to-home (DTH) technology through satellite and dish connectivity that brought high-quality broadcast and on-demand content directly to the consumer. Recently, technological advancements have made the movie or TV watching more convenient through online streaming or Video on Demand (VoD) services. VoD refers to streaming of video content over the Internet, through applications typically referred to as Over-The-Top (OTT). Viewers can access video content through OTT apps in any Internet-connected device like a Smartphone, smart TV, tablet, desktop computer, laptop, etc. Unlike traditional media, streaming services tell varied stories that are not restricted by censors, box office or demographic. It gives a viewing experience with greatly improved sound and visual quality, provided the consumers have a stable Internet.

OTT bypasses cable, broadcast, satellite television and other platforms that generally act as a controller or distributor and enables disintermediation. The sole gateway to consumers', in the age of traditional media, was through film distributors, theatre runners, television networks or Multiple System Operators (MSOs). With OTT, the content creators can interact with their audience directly through a web page or Smartphone app. This offers the comfort of viewing movie and other entertainment at one's convenient time and place.

Once considered a luxury, an increasingly growing number of Indians are shifting towards cord-cutting or online streaming. While the figures show that the VoD industry is still at its nascent stage, the entry of almost 40 VoD companies in a span of just three years indicates the massive potential of the industry. Out of five Smartphone owners in India, at least four people watch content in at least one OTT app (New18.com, 2019). The OTT apps have become the most downloaded app category ahead of social networking apps like Facebook, messaging apps like WhatsApp, and e-commerce apps like Amazon and Flipkart. The streaming market will collectively account for 46% of the overall growth in the Indian entertainment and media

industry from 2017 to 2022 (PwC India, 2018). This paper presents the emergence, growth, major streaming services in India, content typically consumed in OTT, audience characteristics, problems and future of OTT services in India. The next section discusses the factors that prompted the sudden rise of the VoD market in India.

1.1 Motivation

As the American OTT market is moving closer to maturity, many global players are shifting their focus to other international markets like India to drive their next cycle of subscriber growth. Rajib Basu of Entertainment & Media, PwC India reported that "India is the fastest-growing entertainment and media market globally and is expected to keep that momentum" (PwC India, 2019). Significant factors driving the growth of the VoD market in India are rising Internet & broadband penetration and declining data charges, the proliferation of internet-enabled mobile phones, personalization of content and pricing.

Currently, Internet is being actively used by more than half of the world's population. Though India is only second to China in terms Internet users. At the end of 2019, India had 451 million monthly active Internet users, which is projected at 666.4 million by 2023. The majority of them are mobile phone Internet users, who take advantage of the cheap alternative over the expensive landline connection (IAMAI, 2019). However, a large segment of rural India is devoid of Internet access. Therefore, there is still enormous opportunity for growth, which will contribute to an increase in the overall Internet population. In a country where nearly 70% of the population resides in rural regions, no service meant for the masses can afford to overlook this market.

Today, the Internet is not only a technology which may have a specific effect on how business is conducted in certain sectors, but it is also a market place, as demonstrated by the enormous success of OTT providers (Li, 2015). Reliance Jio has been a significant catalyst in the penetration of Internet and OTT platforms. Jio's telecom network supports over 55% of India's overall OTT traffic and over 65% of OTT consumption on a Smartphone (Keshavdev, 2019). Time spent by rural users, which is about 15 to 30 minutes a day, is also likely to increase as a result of increased bandwidth and a 98% drop in data costs. In response to Jio, other telecommunication services like Vodafone and Airtel have also dropped their tariff rates and introduced easily affordable data plans. OTT also poses a threat to Internet service providers

(ISPs) and telecom industries, as they bear the burden of high data traffic and the cost of maintenance, which are the basic requirements to maintain customers' Quality of Experience (QoE) (Jirakasem and Mitomo, 2019).

Online video consumption is heavily reliant on the availability of devices that are compatible with online video viewing. The Smartphone is the preferred video streaming device in India. In February 2019, nearly 144 million people spent a total of 362 million hours on an OTT platform. In which, 87% of time spent occurred in a Smartphone environment and 13% in a desktop environment (Gevers, 2019).With China failing as a manufacturing hub because of its environmental and labour laws getting stricter, India advanced to fill that spot. India is one of the most promising Original Equipment Manufacturers (OEMs) market. So, the Smartphone penetration is expected to double to 859 million by 2022. The 'Make in India' strategy introduced by the Government of India simplified taxation, labour regulations and encouraged infrastructure development, which made it easier for foreign companies to invest in India.

1.2 Problem definition

After its massive impact on market and culture, OTT became the centre of debate in various aspects, such as its impact on traditional services, threat or opportunity to investors in the industry, and regulatory framework. Copyright owners of contents fear that OTT increases chances of piracy (Crandall, 2014). Ever since content could be stored in digital formats, illegal downloading of movies and TV shows has a significant impact on the market. It is projected to cost the TV and film industry US$ 51.6 billion globally by 2022.The market power of digital media platforms has had massive growth because the OTT platforms have been very lightly regulated in terms of public interest responsibilities and anti-monopolistic behaviour, unlike the legacy media and telecommunications firms. Content with extreme violence, nudity and strong language find their home in OTT platforms because the OTT sector in India is less regulated than its offline counterparts like film and television

Telecoms Regulatory Authority of India (TRAI) has stated concerns over disturbances to the country's social fabric caused by content carried by OTT platforms. The Government of India reaffirmed that, as VoD services are available over the Internet, which is a public medium,

OTT platform operators do not require any license to operate. Moreover, TRAI, believe that the Information Technology Act, 2000, offer enough safeguards. The Information Technology Act, 2000 allows the government or the court to either block or take-down content that they consider objectionable.

Domestic or local broadcasting industries are considered vital to cultural expression and democratic practice. For that reason, they receive government support and are regulated in the public interest. Even though the OTT platforms portrayed as complementary to traditional media, their consumerist approach is disruptive to the values and principles of legacy broadcasting (Zboralska and Davis, 2017). Also, their venture into content distribution is indistinguishably connected to their capacity to accumulate and sell data about their users. Therefore, there is an immediate need to regulate OTT platforms in the public interest.

The inconsistency in OTT regulation is based on the disparity between one-sided and two-sided content markets (Bilbil, 2018). The telco industry embraces the one-sided business model for offering internet service. In contrast, many other OTT service providers, such as YouTube support the two-sided business model and therefore becoming a separate technological business faction.

1.3 Objective of Project

Video consumption through VoD platforms is nowhere close to slowing down. It is a golden era for content creators with entry barriers becoming low. This section discusses different factors and their impact on the future of OTT platforms in India.

Over the last few years, the online media industry has understood that India is not a single market but a combination of multiple markets, each with its unique characteristics. The subset of regional language speaking internet users is growing faster than the Hindi and English-speaking user base. Localized content shows uptake in terms of engagement, as viewers always prefer to consume content in their language. So, primary streaming services like Amazon Prime and Netflix are investing more on producing content besides Hindi and

English, in eight major Indian languages. Hoichoi, an all Bengali content streaming platform, saw an 85% growth in traffic from 76 thousand total unique visitors in March 2018 to 140K in March 2019.

Today, most OTT platforms promote them aggressively through a strategy where they allow initial free usage to enable the customer to experience platforms and demand an incremental premium fee at a later stage after consumer behaviour is in favour. So, the business model that is prevalently employed by OTT providers around the globe is B2C. However, some of the prominent streaming industry stakeholders believe that pure B2C models will not work in India and consider B2B2C as the right way to move forward A syndicated content offering on the applications likes of Jio Apps, Airtel Wynk, has become the norm. To boost revenues, there has been a significant increase in partnerships between telcos and OTT players in India and globally to provide exclusive video content for free to users of particular telco subscriber. For example, Vodafone has been offering package deals which include access to its entertainment platform, Vodafone Play, as well as a free Amazon Prime subscription. Airtel and Netflix formed a strategic partnership where select broadband subscribers received free subscription of Netflix for three months. DTH operator Tata Sky partnered with Amazon to launch the platform 'Tata Sky Binge', which showcases digital content aggregated from multiple apps. So, in the future, the OTT space will observe smaller or newer platforms acquiring customers through the existing large customer base of Telco or other services.

Apart from Smartphone, tablets are another promising device for online video consumption. However, India has only around 5.3% penetration of these devices as of 2017, and it is expected to increase to only about 10% by 2022 (ET Bureau, 2019). The low penetration is a missed opportunity as tablets offer relatively larger screens which are better for consuming HD content as compared to Smartphone. Pixalate (2018) argued that OTT is defined on the basis of the devices used to access the content. Apple CEO Tim Cook predicted in 2015 that the future of TV is apps (Zakrzewski, 2015). Smart TVs, much like Smartphones and tablets, offer internet connectivity and support for a range of apps, including OTT apps. According to Sunil Nair, COO of ALTBalaji, "People sample content on their smartphones and migrate quickly to larger screens if the content is long-form and compelling" (Chatterjee, 2017). Xiaomi claimed that they have sold more than two million smart TVs in India in 14 months of its launch (Mukherjee, 2019). Set-top box providers like Roku, Amazon Fire TV

and Apple TV can be used to transform a dumb or regular TV into a smart TV.

1.4 Limitations of Project

Qualitative research and physical in-depth interview cannot be conducted due to the on-going global pandemic COVID 19. Much of literature review was not available. The limitation of my study restricted itself to the analysis of customer preference and perception. There are many other OTT platforms available but my study is limited to two major players NETFLIX and HOTSTAR leaving behind the others. The study also restricts itself to the geographical area of the city Jamshedpur.

2.LITERATURE SURVEY

2.1Introduction

Menon (2020) states that limitations forced in the wake of Covid-19 pandemic significantly changed the consumption pattern for media and entertainment too. As lockdowns kept individuals from wandering out, either or recreation or work, public activity progressively moved to online stages. Web-based social networking furnished the chance to remain associated with families, companions, partners, neighbours and others. With external channels of entertainment (Out of Home based entertainment) shut by government request, the home based entertainment modes showed consistent growth and development.

Deloitte (2017) report on "Digital Media: Rise of On-demand Content" stated that the availability of affordable smart phones and better internet 4G connectivity has given rise to the demand for video on demand entertainment services. More people are now spending time on digital media compared to the cable or dish network.

ICFAI (2019) report on "Transition of Consumer towards Video Streaming Industry: A comparative analysis of Netflix and Amazon Prime." mentioned that Content is said to be the king when it comes to on-demand video streaming channels and Netflix has slight edge over others in terms of content. Hotstar seems to be considerable choice because of the content it offers at affordable prices.

2.2 Existing System

One of the major reasons why Television is widely consumed is the huge library and options of regional content it provides. The Indian market is still fairly unaffected by the phenomenon of cord cutting. The major reason for this is, there is no economic reason to cut the cord as yet, since, TV delivers the highest value for money. Most OTT players work on the subscription model. According to a research the majority of Indian audiences are still stuck to the free or ad-supported model as of now. Further, several options including web-series, stand-up comedies, etc. are already available on YouTube free of cost. This implies that the OTT players will have to compete with the lower cost of Cable/Dish TV subscriptions and also provide compelling content for viewers to do so. This shift will also depend on the factors mentioned.

earlier in the article.

An interesting thing to note is that despite the growing interest in the digital content, TV viewership has seen a rise of whopping 21% among the young audiences, with 224 minutes of daily time spent.

2.3 Disadvantages of Existing system

The best plan for buying cable TV is to **select which channels and times match your targeted customer.** If you are selling sporting equipment, don't spend money on the cooking channel, focus on ESPN. If you own a tanning salon, buy airtime on the Fashion Network and skip SyFy. If your product is sold to professional women, don't schedule your ads at 2:00 in the afternoon, target evening hours when they are home.

It's great to see your spot on TV – that's an ego boost for any business owner - but being a smart scheduler of your ads is also being a smart manager of your marketing money. The challenge is - which stations, programs and times during the day and night are best for your product or service. The solution is - think about who your audience is and then create a schedule around those demographics

- Lower-rated shows
- Broadcast television programming still dominates (especially local news)
- Smaller audience per channel
- Smaller audiences and segmented channels require a larger ad buy to reach more viewers

Many areas only have a single cable TV provider, and this creates a monopoly. While competition from satellites is increasing, the corporate culture of these monopolies is especially poor. Customer service can be terrible, if not non-existent in many cases, and consumer satisfaction with cable television companies is consistently one of the worst among companies in the United States

Many cable companies are very confused when it comes to how much their service will actually cost in the long run. Many require you to sign up for two years to get a one-year introductory agreement. However, you really have to research their websites to find out how much the second year will cost. In other cases, there are hidden fees, rental charges, and taxes.

2.4 PROPOSED SYSTEMS:

IBM Watson studio (IBM Cognos):

In vision of the problem statement described in the introduction section, an IBM Watson studio platform (IBM Cognos) is used represent the datasets of availability of water present at different states and different regions across the country. The framework is composed of the following important phases:

- Dataset Collection.
- Data Preprocessing.
- Creating folders.
- Visualize the data.
- Representation of the collected data.
- Graphical representations.
- Pictorial representations.

Classifications of the data sets are done on the basis of specific properties possess by the sample variable is capable to classify them. These data samples have the data regarding their particular state wise allocation release of water and quality affected habitations and water contamination. Designed platform is first takes the dataset and the user can represent the data accordingly. IBM Cognos Analytics integrates reporting, modeling, analysis, dashboards, stories**,** and event management so that you can understand your organization data, and make effective business decisions. After the software is installed and configured, administrators set up security and manage data sources.

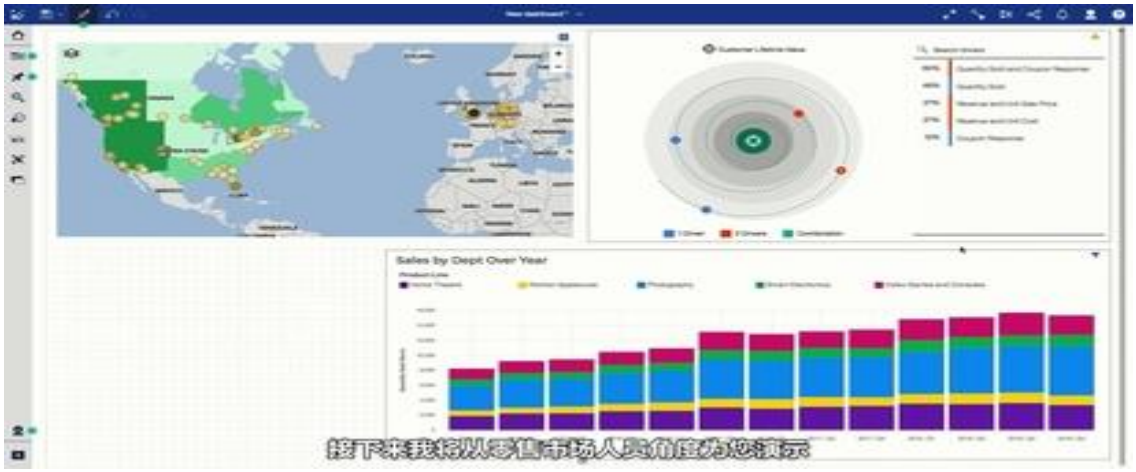


Fig.3: Cognos sample output.

2.5 Conclusion

In summary, it is hard to conclude that OTT's impact on video production ecosystems overall is not positive. Although, perhaps, it is not as positive in every area as everyone might like.

There are legitimate concerns about the potential impact of globalized OTT programming on local culture, but these may be partially counterbalanced by the ability of anyone anywhere to become a content producer and showcase his or her local culture on a global stage. The output of a billion content creators—representing all manner of backgrounds, societies, cultures, and points of view in a way that was unimaginable 20 years ago—cannot be ignored. In this context, OTT has democratized both the production and the consumption of content to an extent never before seen. Is that sufficient to serve local societal and cultural needs and fulfill the objectives of policymakers? If not, how can policymakers support local content when the traditional regulations on supply don't effectively apply to OTT? These are tough questions to answer, but it is absolutely clear that the evolution of consumers' viewing habits and sources of content means that the traditional thinking about content creation needs to evolve as well.

3.ANALYSIS

3.1 INTRODUCTION:

While selecting the API that gives the accurate output, we gone through a lot of API's which gives the results abruptly accurate and from them we selected only one API for the representation and visualization of data that is IBM Cognos, it assumes that the data to be presented in a way that is easily understandable to everyone. In contrast to a user interface, which connects a computer to a person, an application programming interface connects computers or pieces of software to each other. In building applications, an API (application programming interface) simplifies programming by abstracting the underlying implementation and only exposing objects or actions the developer needs. While a graphical interface for an email client might provide a user with a button that performs all the steps for fetching and highlighting new emails, an API for file input/output might give the developer a function that copies a file from one location to another without requiring that the developer understand the file system operations occurring behind the scenes.

3.2 SOFTWARE REQUIREMENT SPECIFICATION:

The software requirements specification document lists sufficient and necessary requirements for the project development. To derive the requirements, the developer needs to have clear and thorough understanding of the products under development. This is achieved through detailed and continuous communications with the project team and customer throughout the software development process.

Software requirements specification is a rigorous assessment of requirements before the more specific system design stages, and its goal is to reduce later redesign. It should also provide a realistic basis for estimating product costs, risks, and schedules. Used appropriately, software requirements specifications can help prevent software project failure.

3.2.1 User requirement:

Representation of data for the survey of availability of water among different states in the country. The built API helps to represent the data and hence reduce

wasting water and to proper use of water for farming and for other uses. The dataset contains different states water availability both in urban and rural areas. All the data is collected in excel sheets and presented.

3.2.2 Software Requirement:

- IBM Watson studio Environment.
- IBM Cognos.

We developed this API at IBM Cognos. Firstly, we had collected the dataset in the excel sheets format then that data is visualized at IBM Cognos, IBM Watson studio. Then the data is represented using bar graphs, Pie charts any many more representations. It does not require any other independent libraries or any other extra frame works to access the output.

3.2.3 Hardware Requirement:

- System: 64-bit windows 10
- RAM:4GB
- Processor:2.3GHz

3.3 CONTENT DIAGRAM OF PROJECT:

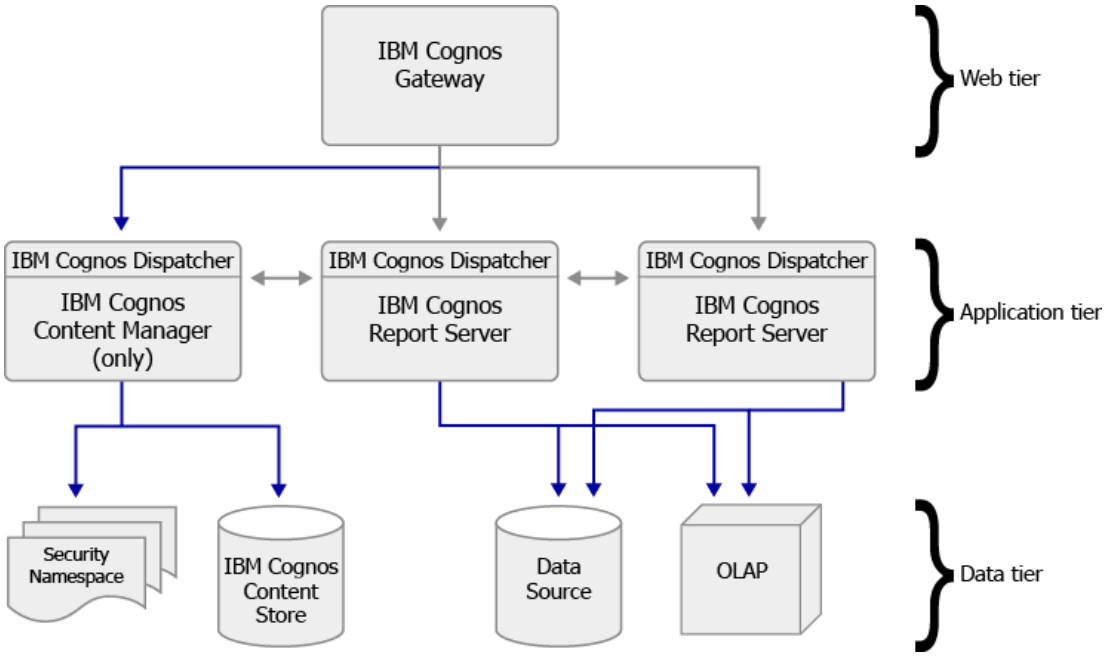


Fig.5: Content diagram of API

3.4 ALGORITHMS AND FLOWCHARTS:

In this paper, IBM Cognos is used to represent the data. Data is visualized and represented. IBM Cognos platform is used to represent the data in an accurate manner. There is no special algorithm is used in this project.

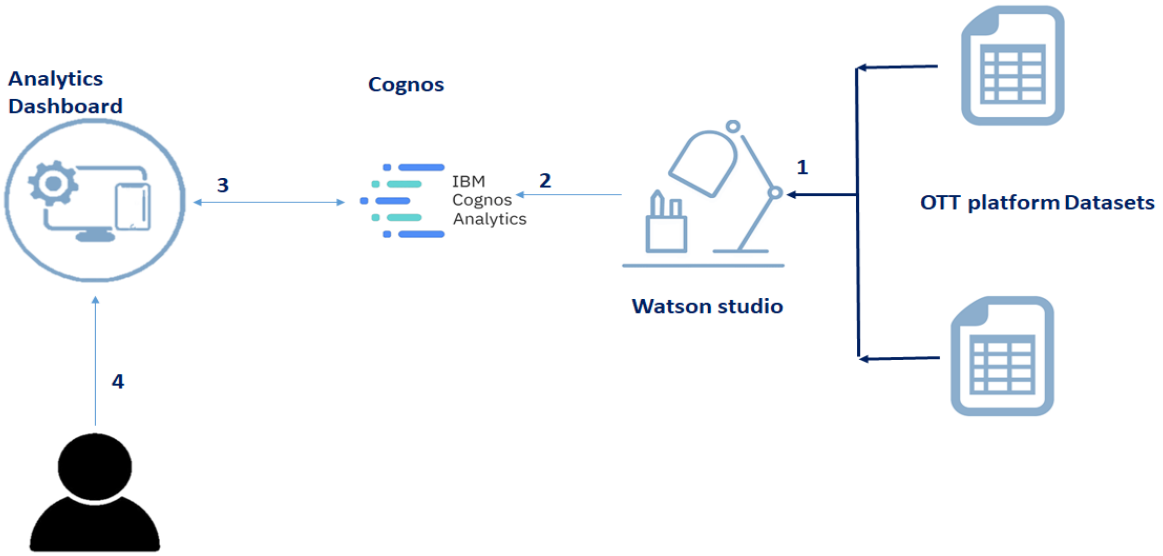
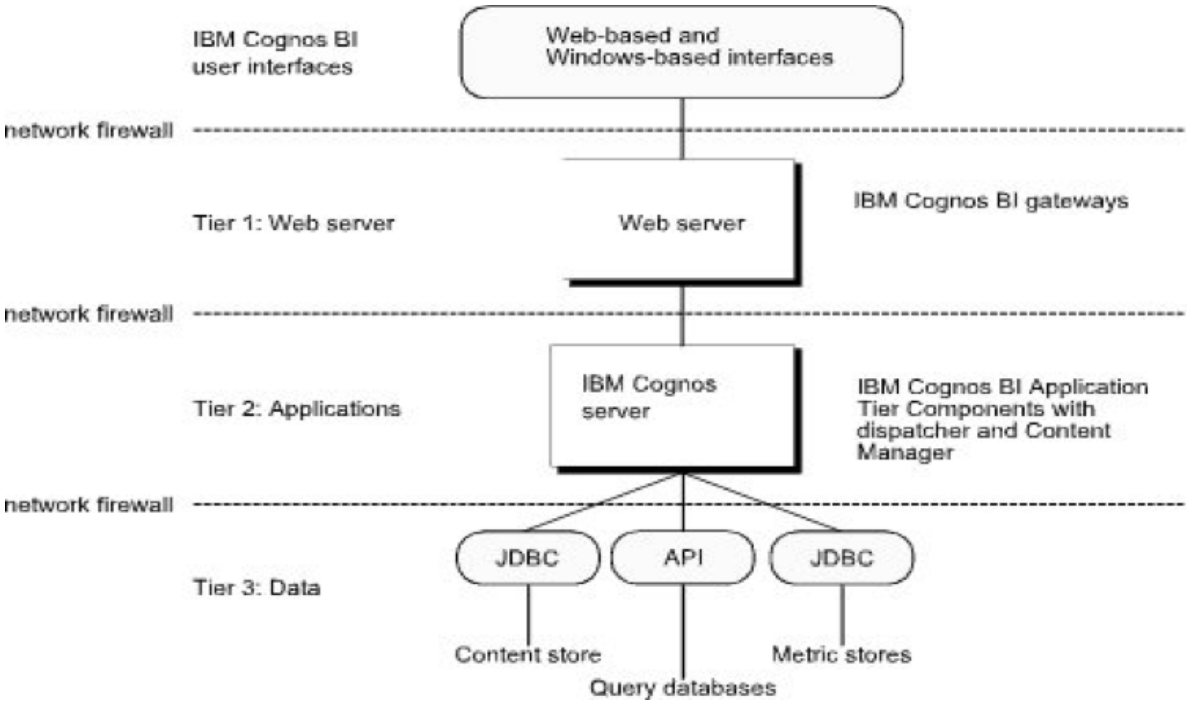


Fig.5: Content diagram of API



3.5 CONCLUSION:

Making use of the prior computer technology we have successfully found a platform that can actually visualize the given dataset correctly in order to make use of the platform correctly and also to know the accurate amount of water present across the country and its usage.

4.DESIGN

- **IBM Cognos Architecture:**

IBM Cognos Business Intelligence has a multitiered architecture. For description purposes, it can be separated into three tiers: Web server, applications, and data. The tiers are based on business function, and are typically separated by network firewalls. IBM Cognos BI user interfaces sit above the tiers. Let's go step by step through all these tiers.

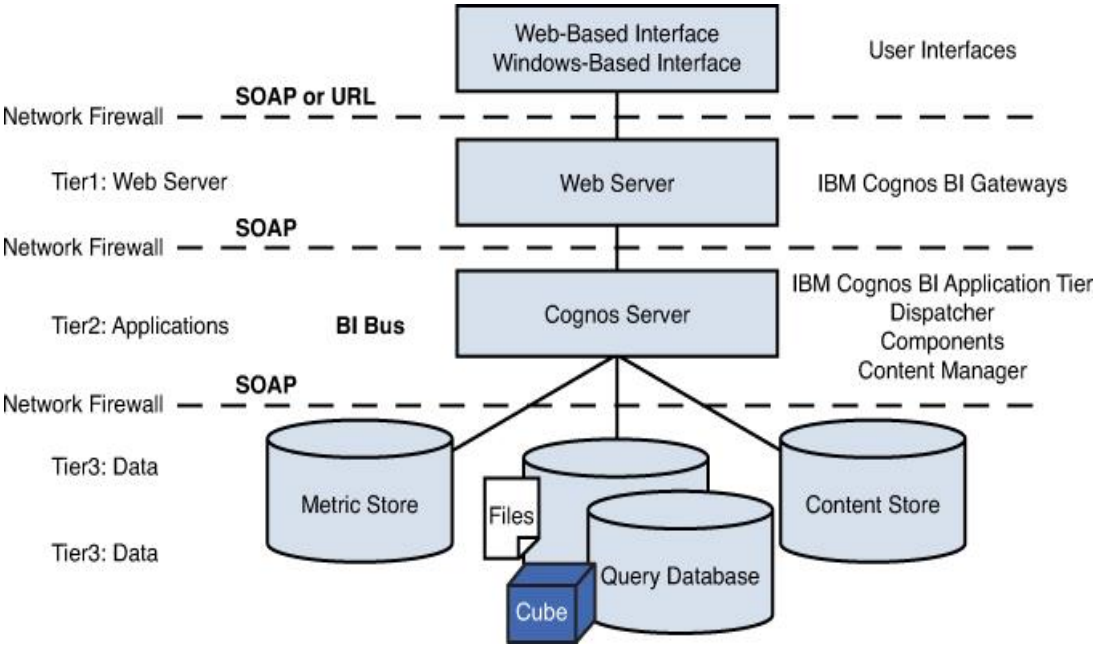
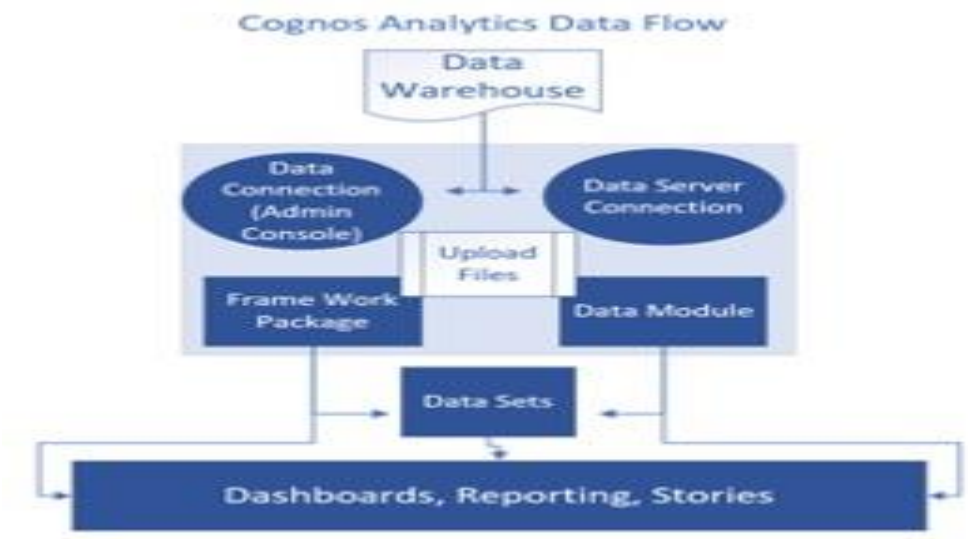


Fig.6: Fine architecture of IBM Cognos.

4.2 DFD DIAGRAM:



4.3 ORGANIZATION OF DATA:

In this project the datasets are taken in excel sheets. And then they are visualized at IBM Cognos dashboard.

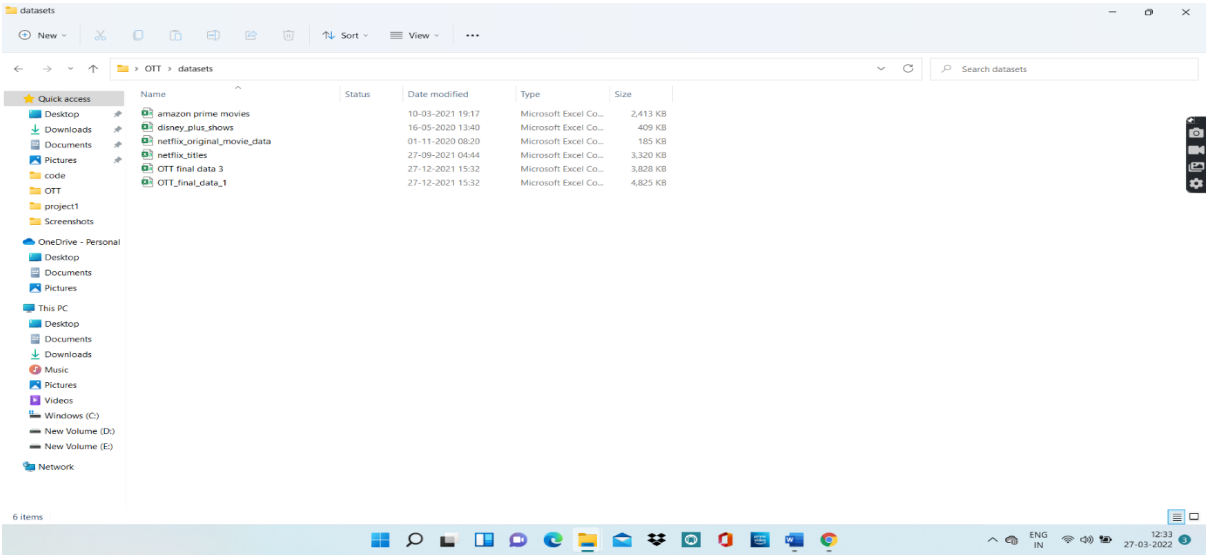


Fig.7: model folders

4.4 CONCLUSION:

The dashboard of IBM Cognos is used to visualize the data that is present in the datasets and gives the accurate output.

5. IMPLEMENTATION AND RESULTS

5.1 INTRODUCTION:

In this paper various platform dashboards are used for the implementation of the dataset but the most suitable platform is IBM Cognos. To get the most from IBM® Cognos® Business Intelligence, you must implement it effectively. This means installing and configuring IBM Cognos BI so that it integrates with your information technology infrastructure and meets your reporting requirements.

To plan an effective IBM Cognos implementation, do the following:

- Familiarize yourself with the IBM Cognos BI architecture.

  For more information, see the architecture section of this document. It will help you understand the components that make up IBM Cognos BI, their functions, and the ways in which they interact with each other, your infrastructure, and your authors and users.

- Decide how to install and configure IBM Cognos BI.

  Know what your options are for installing and configuring IBM Cognos BI, and decide which best meet your needs. For more information, see installation options.

- Decide how to maximize IBM Cognos BI performance in your environment.

  Understand the factors that can affect IBM Cognos BI performance, and plan to ensure and maintain Options. Adequate capacity, scalability, and availability for IBM Cognos BI in your environment. For more information, see performance Planning.

- Decide how to configure IBM Cognos BI multilingual capabilities.

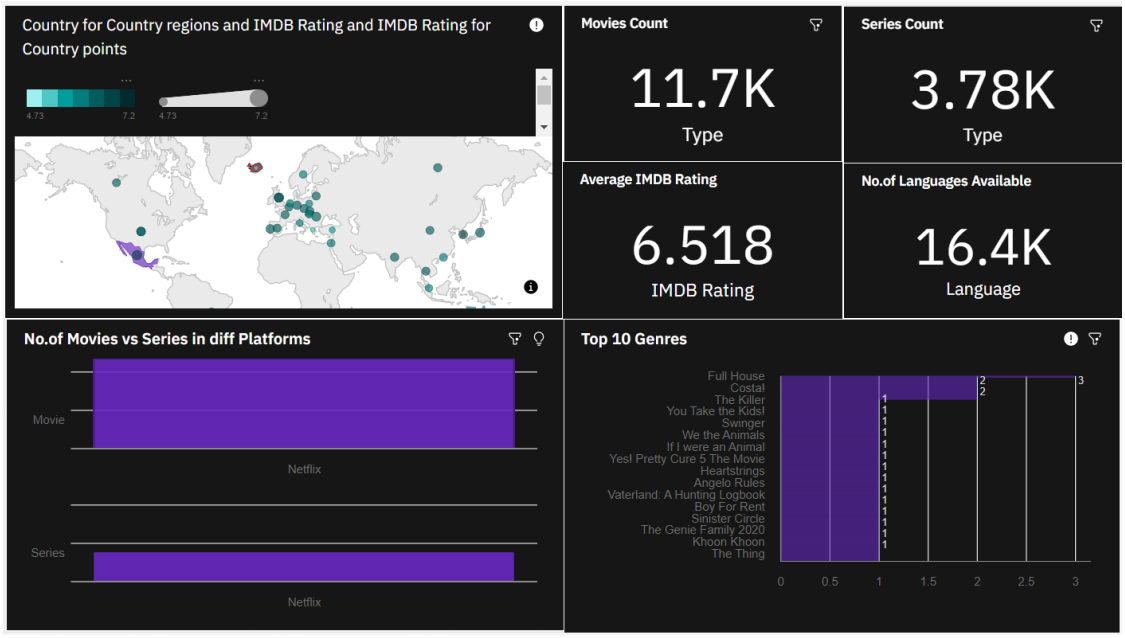
  If you will use IBM Cognos BI in a global environment, decide how to configure IBM Cognos BI so that interface elements and report contents appear in the languages that users need. For more information, see globalization considerations.

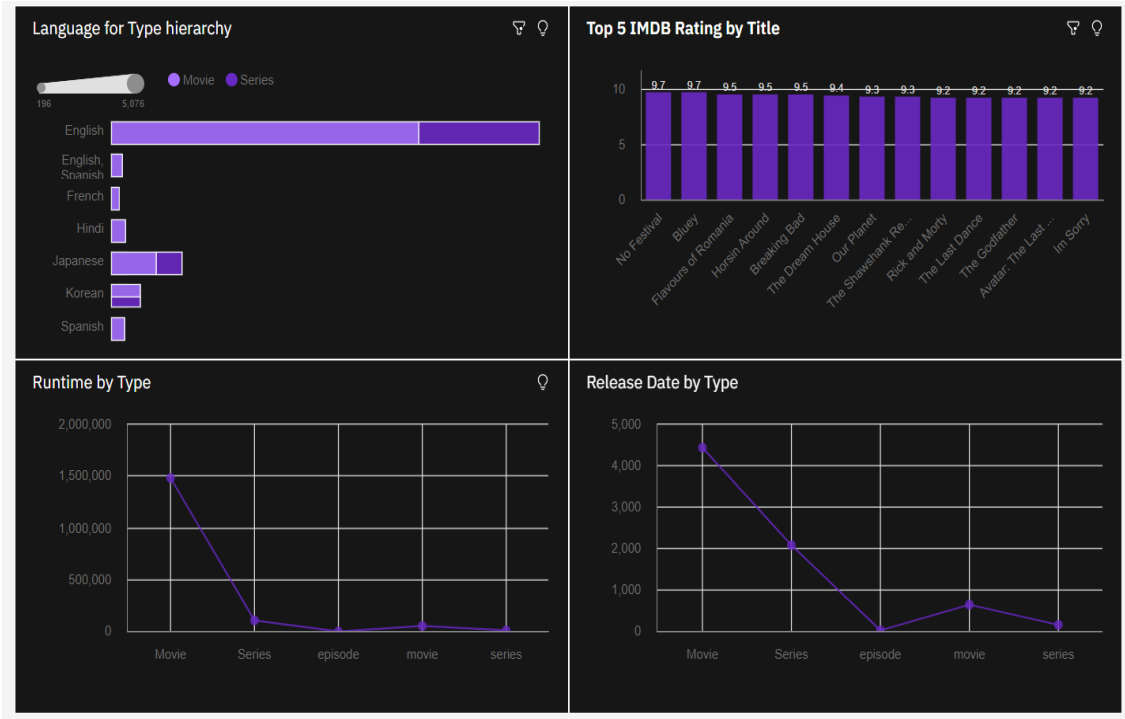
5.2 EXPLANATION OF KEY FUNCTIONS:

The main key function which is used in this project is visualization of the data.

- Implementation of data.
- Visualization.
- Output

5.3 OUTPUT SCREENS:





5.3.1 RESULT ANALYSIS:

The result screens above shows the different amounts of water present in different states across the country. It also represents the data about the funds sanctioned and released by the government to different states and how habituate is affected by contaminated water.

5.4 CONCLUSION:

The main aim of this project is to know the accurate amount of water percentage over the country and how it can be used for better purposes.

6. CONCLUSION

Video streaming has become one of the most successful avenues in the content consumption space in India. Even the smaller OTT platforms are raising capital from international investors and making a significant impact on the market. Indian OTT service Hotstar leads the market at present. Hotstar has the highest penetration of non-paying OTT users. The Smartphone is the most common device for OTT video content consumption, and Xiaomi is the most famous Smartphone brand among OTT users. Jio is the most popular networking service among OTT users, followed by Airtel and Vodafone-Idea. The most preferred language is Hindi and English.

The emergence of OTT would harm the penetration of cable TV in India. Therefore, traditional TV stations should prepare for a paradigm shift brought on by OTT platforms. More importantly, they should work towards making high-quality content that can compete with the material that is available in OTT (Shin et al. 2016). Marketers are changing their budget in tune with the transformation of viewer preference towards digital media. They have a big opportunity today where they can use digital platforms to reach their consumers both in urban and rural India. Along with streaming, the online gaming market in India is projected to become a billion-dollar industry by 2020. More than video streaming, Indian youths are more into gaming on their Smartphone.

Though the consumption of video on digital platforms is on the rise in the country, television is still the largest sub-segment within the entertainment and media industry and will continue to be that way. The Indian television industry with a business of 13,314 million USD in 2017 is poised to grow to the extent of 22,003 million USD in 2022 at a CAGR of 10.6%; at the same time, the global growth average of television viewership is as low as 1.4%. According to Deloitte India (2019), television and appointment viewing will continue for another ten years. The reason is that televisions are now extremely affordable, and people can get a basic cable connection for Rs. 120 a month. Tamil Nadu, Karnataka, Kerala and Andhra Pradesh have over 90% of television penetration. Going forward, the Indian youths will drive digital media consumption. VoD services will go through many changes and advancements until they get the right business model that will lead to their success over cable satellite and cable television.

Future Enhancement:

The future work will focus on exploring more of the dataset values and yielding more interesting outcomes. This study can help in making more effective and reliable data presentations. In further study, we will try to conduct experiments on larger data sets or try to tune the data so as to achieve even more better performance of the API and a great UI support system.