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Security Enhancement of Content Streaming Services using Blockchain Technology

Aashna Gandhi¹, Kinjal Joshi², Krisha Desai³

BSc Applied Statistics & Analytics, Sunandan Divatia School of Science, NMIMS, Navi Mumbai, India

ABSTRACT: Everything runs on data. The quicker it's collected and the more precise it is, the better. Blockchain is perfect for conveying that specific data since it gives quick, shared and totally straightforward data put on an unchanging record that is collected as it were by permissioned and organised entities. A blockchain arrange can track the orders, instalments, accounts, generation etc and conjointly organise them. And since individuals share a single view of the truth, we'll be able to see all points of interest of an exchange, giving us more prominent certainty, as well as modern efficiencies and openings. Our research paper aims to examine how if blockchain technology is incorporated into the internal systems of OTT Platforms, it can solve one of the major challenges faced by them that is piracy and enhance their security.

KEYWORDS: Blockchain Technology, OTT Platforms, Piracy, Security Enhancement.

I. INTRODUCTION

Over the last few years, we have seen a boom in the surgency of OTT Platforms. People have been preferring staying at the comfort of their homes and enjoying movies or tv shows instead of going to the theatres. This has led to people buying subscriptions to these platforms. According to a study from CordCutting.com, as many as 1 in 5 people today are mooching off of someone else's account when streaming video from Netflix, Hulu or Amazon Video. This results in these companies losing millions of dollars every month.

Over the last ten years there has been a significant change in the way that movies are watched, music is listened to, and television programs are delivered. As the legitimate video download businesses are growing, so are illegal movie downloads through technologies like BitTorrent. With the exponential growth of the Internet and peer-to-peer technology, digital piracy has become a serious problem. Most people watch the content that's supposed to be on an exclusive platform on illegal websites such as soap2day or by illegally downloading it on apps such as telegram.

The latest piracy reports indicate that global film piracy increased by 33% during the COVID-19 lockdown. According to the findings of The Irdeto Global Consumer Piracy Threat Report, the media and entertainment sector loses \$2.8 billion of its annual revenue to piracy. A study by CordCutting.com also claims that Netflix may be losing \$192 million due to piracy. This affects not only the streaming services but also the artists who suffer due to loss of royalties.

II. METHODOLOGY

We went ahead with our research paper with a primary research approach where we reviewed various data sets, full-text resources, and sites to examine the relevant information in regard to our research project.

Our objective for analysis was to find the piracy trends of movies or TV shows. We used Excel sheets to plot graphs to come to a conclusion for this.

III. ANALYSIS

To analyse the magnitude of this problem, we found the following statistics from a study conducted by Go Globe on online piracy:

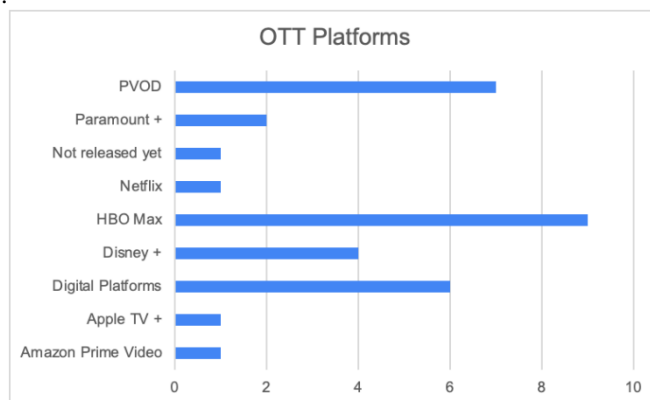
1. 24% of all global internet bandwidth is used for online piracy.
2. 98.8% of data transferred using P2P networks is copyrighted.
3. 91.5% of files available for download on Cyberlockers sites (Rapid share, Megaupload, etc) are copyrighted material.
4. 38% of people across the globe acquired or accessed digital content illegally in 2017.
5. 52% of online users watch pirated videos.
6. 28% users download and share files through P2P networks every day.
7. 49.4% and 17.1% of the most pirated items on the web are TV shows and Movies.

The main conclusion of this study is that: TV shows are the most pirated items on the web followed by Movies.

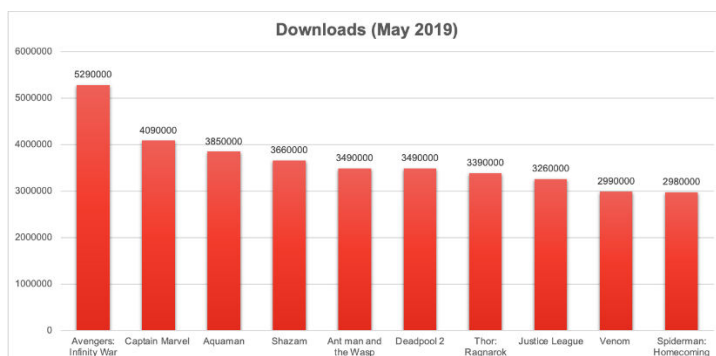
Moving on to a raw dataset we found on Insider and TorrentFreak (website which compares and releases pirated movie statistics for every day, week, month etc).

Our dataset consisted of most pirated 30 movies from the year 2021, along with their release dates and whether they were released on an OTT Platform along with their theatrical release. We analysed the data using Excel sheets to find patterns and statistics for the trends in piracy of movies.

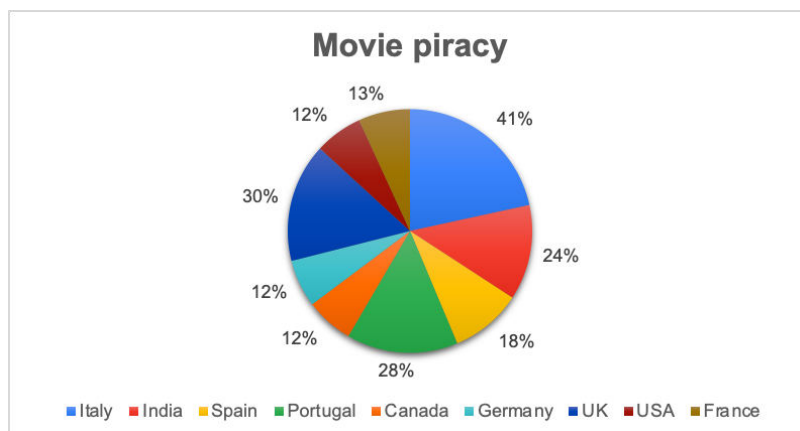
The following are the results:



This graph depicts the relation between the OTT platforms and the number of pirated movies available on them, which have been pirated illegally.



This graph depicts a bar chart of the highest number of movies which are illegally downloaded on pirated sites.



The pie chart depicts the countries and their piracy rates with the top 3 being Italy, India and Spain respectively.

IV. SWOT ANALYSIS

A SWOT (strengths, weaknesses, opportunities, and threats) analysis is a framework used to evaluate a company's competitive position and to develop strategic planning. It assesses internal and external factors, as well as current and future potential. We decided to perform swot analysis to evaluate the potential acceptance of blockchain technology in the OTT platform's internal network.

STRENGTH:

1. It has a good operational efficiency
2. It facilitates easier and safer sharing of information and transactions. No more documents that have to pass along. We can now register everything on the blockchain.
3. It has a Secure encryption and tamper-proof data storage
4. It also Eliminates central authority who has full access to the data.

WEAKNESS:

1. Blockchain is mostly not modular. An old encryption module cannot easily be replaced.
2. What if the service's streaming rules change and we want to export data to a new blockchain with the correct data models? A blockchain doesn't provide an immediate out-of-the-box exit strategy.

OPPORTUNITIES:

1. It Provides a platform for Big Data and analytic research.
2. It also Gives back control to the user e.g., instead of Google and Facebook using your data, you can control who gets access to your data. All these permissions will be stored on the blockchain.
3. The world is becoming more digital, so more people will accept the concept of blockchain in their daily lives.

THREATS:

1. The redundancy of blockchains makes them hard to scale
2. Decentralisation of authority means there's no one power to enforce law and order in the network. No moderators, no leaders, not even a regulatory body. This opens the window for people performing malicious activity
3. Quantum computers (in the future) can serve as a threat as they might have the ability to decrypt data.
4. Blockchain technology consumes more energy than any centralised system. Not only does their redundancy cause them to consume more power than an average centralised cloud-based system, but their transaction validation method plays a great role too.

V. OVERALL CONCLUSION

If businesses start to integrate blockchain technology to maintain their internal networking system, it would be really difficult to hack into their mainframe or even alter the information which can prove beneficial for not only the platform services but also the artists who spend millions behind the movies or TV shows they make. Also, the peer-to-peer



network technology would be beneficial for all the artists who want to release their solo work without the involvement of a third party, and have a direct contact with the consumers. This also enables more small artists to come up and put their work out hassle-free and without losing out on the royalties.

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 9940 572 462  6381 907 438  ijirset@gmail.com



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