
Impact of Digital Piracy and Anti-Piracy Measures on the Business Performance of OTT Platforms in India

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Abstract: The rapid growth of Over-the-Top (OTT) platforms has transformed the consumption of movies, web series, television programmes and other digital entertainment content in India. However, digital piracy has emerged as a major challenge affecting the revenue, subscriber growth, profitability and long-term sustainability of OTT platforms. The present study examined the impact of digital piracy on the business performance of OTT platforms in India. It also analysed the relationship between the challenges experienced by users while accessing pirated OTT content and the performance of legitimate OTT platforms. Digital piracy allows users to access premium content through illegal websites, mobile applications, torrents, messaging platforms and unauthorized streaming links without paying subscription charges. The study was based on primary data collected from 80 respondents through a structured questionnaire. Pearson's correlation analysis was applied to test the proposed hypotheses. The findings revealed a strong and statistically significant negative relationship between the use of digital piracy and OTT platform business performance, with a correlation coefficient of -0.607 and a p-value of 0.000 . The findings also showed a moderate and statistically significant positive relationship between challenges in using pirated OTT content and OTT platform business performance, with a correlation coefficient of 0.469 and a p-value of 0.000 . The study concluded that increased digital piracy adversely affects OTT platform performance, whereas difficulties and risks associated with pirated content may encourage consumers to use legitimate OTT platforms. Therefore, effective anti-piracy technologies, legal

enforcement, consumer awareness and affordable subscription plans are important for improving the business performance of OTT platforms in India.

Keywords: Digital Piracy, Anti-Piracy Measures, OTT Platforms, Business Performance

Introduction: The rapid growth of Over-the-Top (OTT) platforms has significantly changed the way people consume movies, web series, television programmes, sports and other digital entertainment content in India. However, the increasing use of illegal websites, torrent platforms, unauthorized applications and streaming links has made digital piracy a serious challenge for OTT businesses. Piracy may reduce subscription revenue, subscriber growth, customer retention and profitability, while also increasing the cost of content protection and legal enforcement. To address this issue, OTT platforms adopt anti-piracy measures such as Digital Rights Management, encryption, watermarking, website blocking, secure login systems and consumer-awareness campaigns. Therefore, the present study examines the impact of digital piracy and anti-piracy-related factors on the business performance of OTT platforms in India.

Digital Piracy

Digital piracy refers to the unauthorized access, copying, downloading, streaming, sharing, reproduction, or distribution of digital content without obtaining permission from the copyright owner or content producer. Digital content may include movies, web series, television programmes, music, live sports, e-books, software, games, and other forms of online entertainment. In the context of OTT platforms, digital piracy occurs when users watch or download premium content through illegal websites, mobile applications, torrent platforms, social media groups, messaging applications, or unauthorized streaming links instead of using the official OTT platform. It may also include recording content from a legitimate platform and uploading it elsewhere, distributing leaked episodes or films, bypassing subscription controls, and sharing account credentials with unauthorized users.

Digital piracy has become a major challenge for OTT platforms because digital content can be copied and distributed quickly to a large number of users at very little cost.

Newly released films, web series, and live sporting events are often made available on piracy websites within a short period after their official release. Easy access to free pirated content, high subscription costs, the need to purchase multiple OTT subscriptions, limited availability of content in some regions, and lack of awareness about copyright laws may encourage users to depend on illegal sources. Improvements in internet speed, smartphones, file-sharing applications, and anonymous online platforms have further increased the reach of digital piracy.

Anti-Piracy

Anti-piracy refers to the technological, legal, administrative, educational, and business measures adopted to prevent, detect, control, and reduce the unauthorized access or distribution of copyrighted digital content. The main purpose of anti-piracy measures is to protect the ownership rights of content creators, production companies, broadcasters, and OTT platforms. These measures aim to ensure that users access digital content through authorized sources and that platforms receive appropriate revenue for the content and services they provide.

OTT platforms use various technological measures to control piracy. Digital Rights Management, commonly known as DRM, restricts users from copying, recording, or downloading content without authorization. Digital watermarking places visible or invisible identification codes within a video, helping platforms trace the source of leaked content. Encryption protects content while it is being stored or transmitted over the internet. Device restrictions, secure login systems, two-factor authentication, account activity monitoring, and limits on simultaneous streaming can also reduce unauthorized account usage and password sharing. Automated content-recognition tools may be used to identify and remove illegally uploaded videos from websites and social media platforms.

Impact of Digital Piracy on the Business Performance of OTT Platforms

Digital piracy negatively affects the business performance of OTT platforms by reducing subscription revenue, advertising income, and the number of paying

subscribers. When users watch movies, web series, sports, or other premium content through illegal websites, applications, torrents, or unauthorized links, they may avoid purchasing or renewing legal subscriptions. This slows subscriber growth, increases cancellations, and reduces the returns earned from investments in original and licensed content.

Digital piracy also increases the operational and legal costs of OTT platforms because companies must spend money on monitoring illegal websites, removing leaked content, strengthening security systems, and taking legal action. Frequent piracy may discourage platforms from investing in new films, regional content, and premium productions. Therefore, digital piracy can weaken profitability, market share, competitiveness, and the long-term sustainability of OTT platforms in India.

Impact of Anti-Piracy Measures on the Business Performance of OTT Platforms

Anti-piracy measures positively influence the business performance of OTT platforms by protecting digital content and reducing unauthorized access. Measures such as Digital Rights Management, encryption, watermarking, website blocking, secure login systems, account monitoring, and rapid removal of leaked content help prevent illegal copying and distribution. These measures encourage viewers to use official platforms, which can improve paid subscriptions, revenue growth, customer retention, and subscription renewal rates.

Effective anti-piracy strategies also improve the confidence of content producers, investors, advertisers, and distribution partners. Legal action, consumer-awareness campaigns, affordable subscription plans, and flexible pricing can further reduce dependence on pirated content. As a result, strong anti-piracy measures support profitability, brand reputation, investment in original content, subscriber growth, and the long-term development of OTT platforms in India.

Review of Literature

1. **Dabholkar et al. (2021)**, In the research titled “Looney Tunes: Exposing the lack of DRM protection in Indian music streaming services” The study concluded that major Indian music-streaming platforms had weaknesses in their content-protection mechanisms that could allow streamed music to be extracted and distributed illegally. The authors observed that relying on hidden or less-visible security procedures without strong Digital Rights Management is not an effective long-term protection strategy. Such security weaknesses can expose streaming platforms to piracy and lead to potential revenue losses for platforms, artists, producers, and other stakeholders. The study recommends stronger DRM, encryption, authentication, and content-protection systems for Indian streaming services.
2. **Danaher & Smith (2014)**, In the research titled “Gone in 60 seconds: The impact of the Megaupload shutdown on movie sales” The study concluded that shutting down Megaupload and its associated piracy websites produced a measurable increase in legitimate digital movie sales and rentals. After the shutdown, digital revenues of the studied motion-picture studios increased by approximately 6.5% to 8.5%. This indicates that pirated content can substitute for legal purchases and that effective action against large piracy platforms can recover some lost demand. Therefore, website shutdowns and legal enforcement may positively influence the revenue performance of digital entertainment platforms.
3. **Danaher et al. (2014)**, In the research titled “The effect of graduated response anti-piracy laws on music sales: Evidence from an event study in France” The study concluded that France’s graduated-response anti-piracy law, known as HADOPI, positively affected legal digital music sales. Public awareness of the law and the possibility of receiving warnings or penalties encouraged some consumers to shift from illegal file sharing to authorized music-purchasing channels. The findings indicated that French iTunes track and album sales increased more strongly than those in comparable European countries after the policy received public attention. Thus, properly communicated legal measures and progressive warnings can discourage piracy and improve legitimate digital sales.
4. **Frick (2023)**, In the research titled “Pirate and chill: The effect of Netflix on illegal streaming” The study concluded that the availability and convenience of legal

streaming services significantly influence consumers' intention to access pirated content. When selected films were moved from Netflix to Hulu, piracy-related search intentions for those films increased by approximately 20% to 22% compared with films that remained available on Netflix. This suggests that removing content from a widely used platform or fragmenting content across multiple subscription services may encourage viewers to search for illegal alternatives. Therefore, content availability, platform accessibility and subscription convenience are important factors in controlling digital piracy.

5. **Hsiao & Ayers (2019)**, In the research titled "The price of free illegal live streaming services" The study concluded that users of illegal live-streaming services face substantial privacy and cybersecurity risks in addition to participating in copyright infringement. Illegal streaming websites were found to use extensive tracking systems, deceptive advertisements, scams, browser fingerprinting and potentially malicious extensions more frequently than legitimate streaming services. These websites generate revenue by exploiting user traffic while offering unauthorized access to copyrighted content. The authors therefore emphasized the need for stronger technical detection, consumer awareness, website monitoring and coordinated action against illegal live-streaming platforms.
6. **Koklic et al. (2016)**, In the research titled "Three-level mechanism of consumer digital piracy: Development and cross-cultural validation" The study concluded that digital-piracy behaviour is influenced by factors operating at individual, interpersonal and societal levels. Consumers' perceived personal risk, susceptibility to social influence and perceptions about the moral seriousness of piracy affect their involvement in unauthorized downloading and sharing. Past piracy behaviour may also lead consumers to rationalize their actions, which can increase their intention to engage in piracy again. The results were generally consistent across four European countries, although interpersonal influence did not have an equally strong effect in every country.
7. **Montgomery et al. (2014)**, In the research titled "An empirical analysis of the impact of pre-release movie piracy on box-office revenue" The study concluded that movie piracy occurring before an official theatrical release causes significant financial damage because consumers gain access to the content before legitimate

purchasing opportunities become available. On average, pre-release piracy was associated with a 19.1% reduction in box-office revenue compared with piracy occurring after the movie's release. The findings show that the timing of a piracy leak is important, with early leaks producing more serious revenue displacement. Therefore, rapid detection, watermarking, secure distribution and strict pre-release content controls are essential for protecting revenue.

Research Gap:

The reviewed studies have mainly examined digital piracy in relation to music streaming, movie piracy, illegal live streaming, consumer behaviour, cybersecurity risks, legal enforcement, and box-office or digital sales. However, limited research has specifically analysed the combined impact of digital piracy and anti-piracy measures on both revenue growth and subscriber growth of OTT platforms in the Indian context. Existing studies are largely based on foreign markets, individual piracy incidents, music services, or theatrical movie revenues, and therefore may not fully explain the behaviour of Indian OTT consumers. There is also insufficient evidence on how content availability, subscription cost, platform fragmentation, password sharing, DRM, website blocking, consumer awareness, and legal actions collectively influence subscriber acquisition, retention, renewal, and platform profitability. Hence, the present study seeks to fill this gap by examining how the extent of digital piracy and the effectiveness of anti-piracy measures affect the overall business performance of OTT platforms in India.

Research Methodology

The study adopted a descriptive and analytical research design to examine the impact of digital piracy and anti-piracy-related factors on the business performance of OTT platforms in India. Primary data were collected from 80 respondents through a structured questionnaire covering demographic characteristics, use of pirated OTT content, challenges experienced while accessing pirated content and perceptions regarding OTT platform business performance. The respondents included 42 males and 38 females belonging to different age groups and educational backgrounds. Frequency and percentage analyses were used to describe the demographic profile of respondents,

while Pearson's correlation test was applied to examine the relationships between the study variables. The hypotheses were tested at the 5 per cent and 1 per cent levels of significance.

Data Analysis

Data analysis was undertaken to organise, present and interpret the responses collected from the participants. Descriptive statistics were used to explain the demographic profile, while Pearson's correlation analysis was applied to test the relationship between digital piracy, challenges in using pirated OTT content and the business performance of OTT platforms.

Demographic Factor

Question No.	Statement	Category	Frequency	Percent
1	Gender	Male	42	52.5
		Female	38	47.5
2	Age Group	Below 18 Years	4	5.0
		18-25 Years	27	33.8
		26-35 Years	25	31.3
		36-45 Years	15	18.8
		Above 45 Years	9	11.3
3	Educational Qualification	Up to Higher Secondary	8	10.0
		Undergraduate	18	22.5
		Graduate	26	32.5
		Postgraduate	21	26.3
		Professional/Doctoral Degree	7	8.8

The demographic profile shows that out of 80 respondents, 42 (52.5%) were male and 38 (47.5%) were female, indicating an almost balanced gender distribution with a slightly higher representation of males. In terms of age, the largest group consisted of

respondents aged 18–25 years with 27 (33.8%), followed by those aged 26–35 years with 25 (31.3%), while 15 (18.8%) were aged 36–45 years, 9 (11.3%) were above 45 years, and 4 (5.0%) were below 18 years. Regarding educational qualification, graduates formed the largest category with 26 respondents (32.5%), followed by postgraduates with 21 (26.3%) and undergraduates with 18 (22.5%). Further, 8 respondents (10.0%) had studied up to higher secondary level, while 7 (8.8%) held professional or doctoral qualifications, showing that most respondents had attained graduate-level or higher education.

Objective and Hypothesis

To examine the impact of digital piracy on the business performance of OTT platforms in India.

Null Hypothesis H₀₁: There is no impact of digital piracy on the business performance of OTT platforms in India.

Alternate Hypothesis H₁₁: There is an impact of digital piracy on the business performance of OTT platforms in India.

To study the objective, Correlation Test is applied and f-test results are as follows:

Correlations			
		OTT Platform Business Performance	Use of Digital Piracy
OTT Platform Business Performance	Pearson Correlation	1	-.607**
	P-value		.000
	N	79	79
Use of Digital Piracy	Pearson Correlation	-.607**	1
	P-value	.000	
	N	79	80
**. Correlation is significant at the 0.01 level (2-tailed).			

Interpretation: The above results indicate that calculated p-value is 0.000. It is less than 0.05. Therefore, correlation test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

Conclusion: There is an impact of digital piracy on the business performance of OTT platforms in India.

Findings: The correlation table shows a strong negative relationship between OTT platform business performance and the use of digital piracy, with a Pearson correlation coefficient of $r = -0.607$. This indicates that an increase in the use of digital piracy is associated with a decline in the business performance of OTT platforms. The p-value is 0.000, which is below the 0.01 significance level, confirming that the relationship is statistically significant. Therefore, digital piracy has a significant adverse association with OTT platform business performance.

To analyse the relationship between challenges in using pirated OTT content and the business performance of OTT platforms in India.

Null Hypothesis H_{02} : There is no relationship between challenges in using pirated OTT content and the business performance of OTT platforms.

Alternate Hypothesis H_{12} : There is a relationship between challenges in using pirated OTT content and the business performance of OTT platforms.

To study the objective, Correlation Test is applied and f-test results are as follows:

Correlations			
		OTT Platform Business Performance	Challenges in Using Pirated OTT Content
OTT Platform Business Performance	Pearson Correlation	1	.469**
	P-value		.000
	N	79	79
Challenges in Using Pirated OTT Content	Pearson Correlation	.469**	1

	P-value	.000	
	N	79	80
**. Correlation is significant at the 0.01 level (2-tailed).			

Interpretation: The above results indicate that calculated p-value is 0.000. It is less than 0.05. Therefore, correlation test is rejected. Hence Null hypothesis is rejected and Alternate hypothesis is accepted.

Conclusion: There is a relationship between challenges in using pirated OTT content and the business performance of OTT platforms.

Findings: The correlation table shows a moderate positive relationship between OTT platform business performance and challenges in using pirated OTT content, with a Pearson correlation coefficient of $r = 0.469$. This indicates that as users experience greater challenges while accessing pirated OTT content, the business performance of legitimate OTT platforms tends to improve. The p-value is 0.000, which is below the 0.01 significance level, confirming that the relationship is statistically significant. Therefore, difficulties associated with pirated content are significantly and positively associated with OTT platform business performance.

Conclusion

The study concluded that digital piracy had a significant adverse relationship with the business performance of OTT platforms in India. The Pearson correlation coefficient of -0.607 indicated a strong negative association, demonstrating that an increase in the use of pirated content was associated with a decline in OTT platform business performance. The statistically significant p-value of 0.000 confirmed that the relationship was not due to chance, leading to the rejection of the null hypothesis and acceptance of the alternative hypothesis. Digital piracy may negatively affect OTT platforms by reducing subscription revenue, subscriber acquisition, renewal rates, advertising income and returns on investment in original and licensed content. It may also increase operational expenses because platforms must invest in content monitoring, cybersecurity systems, Digital Rights Management, watermarking and legal action against piracy websites. The study also found a moderate positive and statistically significant relationship between challenges in using pirated OTT content

and OTT platform business performance, with a Pearson correlation coefficient of 0.469 and a p-value of 0.000. This suggested that when users experienced difficulties such as malware, misleading advertisements, privacy risks, poor video quality, broken links and unreliable access while using pirated content, they were more likely to prefer legitimate OTT platforms. Therefore, greater awareness of the risks associated with piracy, along with effective technological and legal anti-piracy measures, could encourage consumers to access content through authorized platforms. OTT companies should strengthen DRM, encryption, watermarking, secure login systems, account monitoring and rapid content-removal mechanisms. They should also offer affordable subscription plans, flexible pricing, convenient access and diverse content to reduce consumers' dependence on illegal sources. Overall, controlling digital piracy and increasing the difficulties associated with unauthorized content access can contribute to improved revenue, subscriber retention, brand reputation, profitability and long-term sustainability of OTT platforms in India.

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