

# A Detailed Bibliographic Analysis on the Growth and Impact of Over The Top (OTT) as a Medium of Education using Artificial Intelligence Tools

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## Abstract

*This article provides a bibliographic analysis of the growth of Over-the-top (OTT) media services in education, enhanced by Artificial Intelligence (AI), drawing on research over the past 15 years. The report underscores the increasing impact of AI-driven OTT platforms in promoting the cause of education, especially following the COVID-19 epidemic. It recognises the substantial expansion of India's higher education industry, targeting a 50% Gross Enrolment Ratio by 2035. Nevertheless, the study reveals a research deficiency in comprehending the influence of OTT on this almost exponentially growing educational field. Of the 2986 publications published between 2008 and 2025, 1361 pertinent articles pertaining to computer science, engineering, and social sciences were examined. Journals constituted the predominant publication type at 49.4%, succeeded by conferences at 36.1%. The report identifies the United States and India as prominent contributors to OTT research. A user survey conducted using primary data gathered from as many as 7 states of India from about 1900 respondents on Zoho platform revealed that Coursera is the favoured OTT education platform.*

**Keywords:-** Over the Top (OTT), Growth in Education, Gross Enrolment ratio (GER),

## Introduction

All sectors have seen direct/indirect intervention of Artificial Intelligence (AI) since its much observant growth in last 3 years or so. Adoption of Over the Top (OTT) services has been on the rise especially after COVID-19 (Mittal et al., 2022). Involvement of AI in OTT has a huge potential to make a difference to lives of billions of learners who can't afford to attend the premium educational institutes across the world. (N. Sharma and Tandon, 2024).

(Kumari Pallawi, 2024) have explained in their study that the COVID-19 pandemic forced schools in Delhi to quickly adopt digital tools for teaching and learning.

A study involving students, teachers, and parents showed that despite challenges, everyone became more comfortable with technology. This shift to online learning, using tools like Zoom and Google Classroom, helped teachers and students develop important digital skills. The pandemic sped up the use of technology in education, which is also a goal of India's National Education Policy (NEP 2020).

Indian higher education sector boasts of a network of close to 45,000 colleges and 1100+ universities (Ministry of information and broadcasting government of India, 2020). With highly sustained efforts, government is trying to inch toward achieving Gross

Enrolment Ratio (GER) target of close to 50 % by 2035 in higher education sector, which currently stands to be only about 28%(National Education Policy, 2020) . Establishment of Distance Education Bureau (DEB) by UGC and imposing the guidelines for offering programs through Online Distance Learning mode are proving to be basic guideline to offer more opportunities to students to pursue their higher education even after dropping out from more formal education owing to any kind of constraints(Distance Education Bureau, UGC Website, n.d.).

## Literature Review

Respective online learning platforms have recorded growth of 12% (Linked IN Learning), 16%(SWAYAM) and 18% (Coursera.org) etc. in last about a decade or so.(Cam Carey and Arunav Sinha, 2024).

KBhardwaj, 2024 in their work examined in detail the MOOC based in-service training for teacher improvement in India, using the DIKSHA platform during the COVID-19 lockdown.

While it is well established that there has been an unprecedented growth in the field of reaching out to masses for education through Over-the-Top platforms, there has not been corresponding similar growth in the research studies in this area, which could help the business leaders or policy makers reach on to the correct decisions.

On a close analysis, we found that there have been just close to 3849 number of articles when one tries to find articles relating to OTT on Scopus database system. Nature of these studies has also been very basic and has been limited to either few cities or specific countries only. We in our earlier works have communicated about the expanding role of Artificial Intelligence in the success

of OTT education apps and carried out basic studies toward adoption habits of students in the age range of 15 to 20 years for OTT education platforms.(M. Sharma et al., 2024)

In this paper, we present a detailed bibliographic analysis of all the research papers published in the field of OTT education and which have been indexed in Scopus in last 15 years of time. (Scopus Database, n.d.).We believe that this kind of fundamental analysis will help any of the future perspective researcher who wants to make this field as a basic area for research work. Information presented through many graphs and tables suggest a strong need to carry out detailed research in this field and also some crucial information for the policy makers and education app developers for the ultimate benefit of the community at large.

(Prakasha et al., 2024) in their work Students' usage of Over-the-top (OTT) streaming platforms affecting their academic and socio-demographic profile explain that how Ott platforms are impacting their lives.

(Jha and Harichandan, 2022)provides overview regarding MOOCs in India and SWAYAM.

(Wei and Taecharungroj, 2022) also explains how MOOCs improve learning experience and how online reviews of business courses on Coursera are analysed and impacted business strategies.

(L. Sharma and Bagdi, 2024)explores deep Understanding on the behavioural intention of students for education via OTT platforms driven by social media advertisements

Paper has been divided into four sections. Methodology section immediately following the Introduction section details on the process adopted to carry out this detailed bibliographic

analysis. Section 3 in form of Results and Discussions present the results in the form of graphs and plots which have been supported by due explanations. Paper culminates into the conclusion paper followed by list of references used for this analysis work.

**Methodology**

While carrying out the bibliographic analysis, mainly Scopus database was considered. Queries based on finding the words like OTT, OTT and Artificial Intelligence were used to search the count of papers published from year 2008 onwards. Articles were further categorised into journal, conference articles or book chapters etc. Individuals with maximum number of research

papers were identified and same has been brought up in this paper.

**Results and Discussions**

**Detailed bibliographic analysis**

Count of articles from 2008 till 2025 was found to be 2986 on searching the keyword, “Over-the-top” on Scopus database system. However, on a close analysis and going through the title and keywords of all the papers, it was established that not all the papers fell into the category of ‘Over-the-top’. A lot many papers were relating to medical Science field. Accordingly, papers belonging to following categories were excluded for any further consideration -

**Table 1: Category of papers excluded for any further consideration in this paper**

Subject area	Number of papers
Medicine	670
Biochemistry, Genetics and Molecular Biology	188
Physics and Astronomy	416
Pharmacology, Toxicology and Pharmaceutics	94
Materials Science	91
Chemical Engineering	36
Earth and Planetary Sciences	122
Environmental Science	113
Immunology and Microbiology	19
Neuroscience	75
Agricultural and Biological Sciences	65
Energy	66
Chemistry	48
Chemical Engineering	40
Nursing	16
Dentistry	8
Veterinary	3
Undefined	1

Only following subject areas were taken into account for any further consideration of papers for carrying out a meaningful analysis. Total 1361 articles were considered for the analysis with their categorical division of count

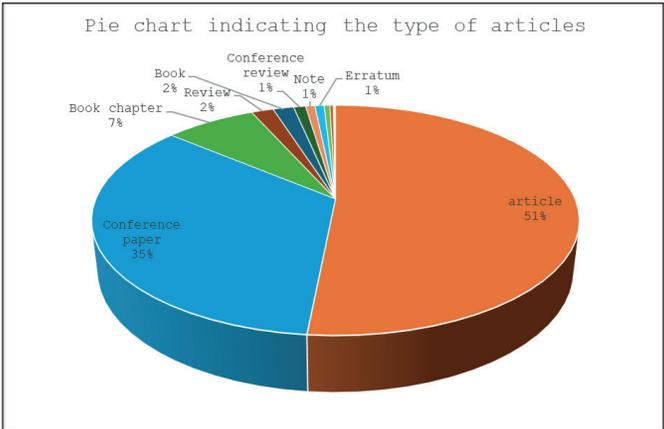
mentioned in Table 2. It is worth noting that as there is an overlap in the category of articles, it is quite possible that one single article may have fallen into more than one category

**Table 2: Category of papers included for any further consideration in this paper**

Subject area	Count of papers
Computer Science	868
Engineering	678
Social Sciences	446
Mathematics	351
Business Management and Accounting	233
Arts and Humanities	172
Decision Sciences	145
Health Professionals	101
Economics, Econometrics and Finance	100
Multidisciplinary	42
Psychology	32

An analysis was also carried out to find the type of articles published in this area. A quick analysis in the form of pie chart is presented in Figure 1. As

clear, 51 % research articles have been published in journals followed by 35 % in conferences and 7 % as book chapters.



**Fig. 1: Distribution of count of articles in journals, conferences, book chapters and other on topic 'OTT' and education**

We carried out analysis on most frequently used keywords for papers with theme focusing on OTT. A summary of the same is presented in Figure 2. It is clear that out of the total 1361 papers which we analysed; 673 times keyword OTT was used. 492 papers focused

on keyword-Quality of service. 106 papers adopted 'video streaming' as the keyword. So, future researchers may focus their literature survey using the combination of these keywords to find out the best set of the papers.

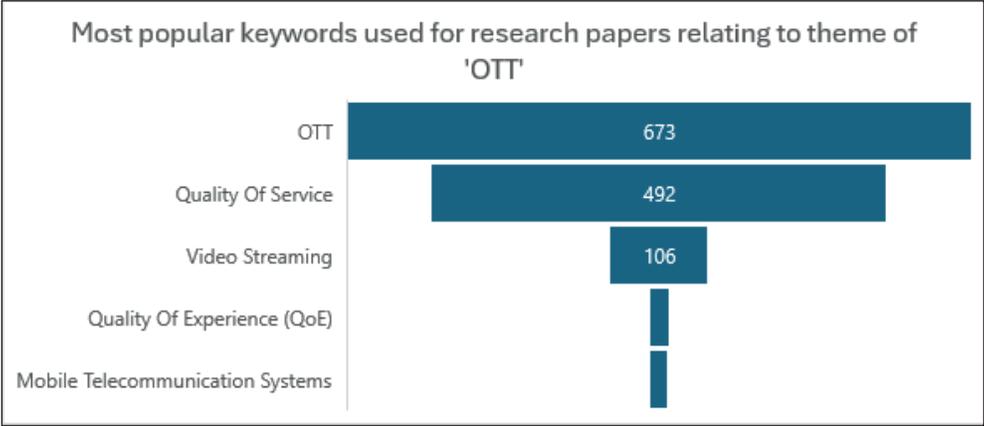


Fig. 2: Summary of most frequently used keywords on topic 'OTT'

United States of America and India have contributed maximum no. of articles in last 15 years with count of 456 and 389

respectively. A summary of the analysed results has been presented in figure 3.

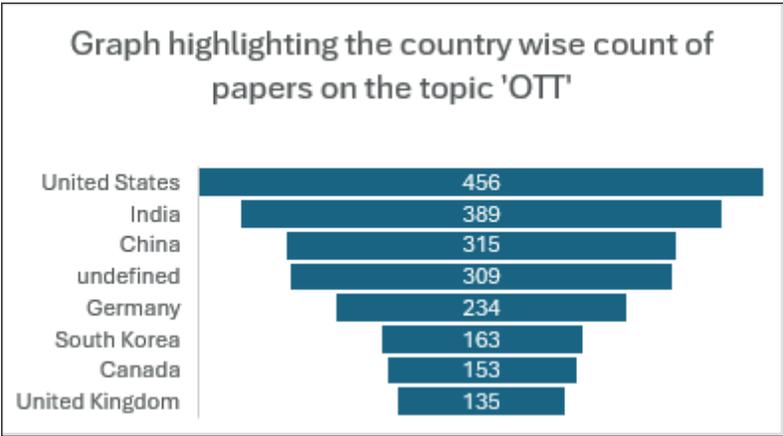


Fig. 3: Country wise contribution on count of articles on topic 'OTT'

We tried to find out the names of the researchers who have contributed maximum number of articles on the theme relating to OTT. Figure 4 provides the Tree map highlighting the count of

(Priyanka Yadav, 2024) in their work have also examined the role of ChatGPT, an AI tool, in changing social science research in higher education. While ChatGPT can help with tasks like writing and generating ideas, the study also highlights potential problems. Concerns

include a possible decrease in creativity and originality, along with ethical issues related to privacy and accuracy have been discussed. The authors suggest that while AI tools like ChatGPT offer themselves only in ethical research practices.

benefits, their use in research needs careful guidelines and accountability to ensure quality and ethical practices. That way, it is the prime responsibility of researchers to ensure that they engage

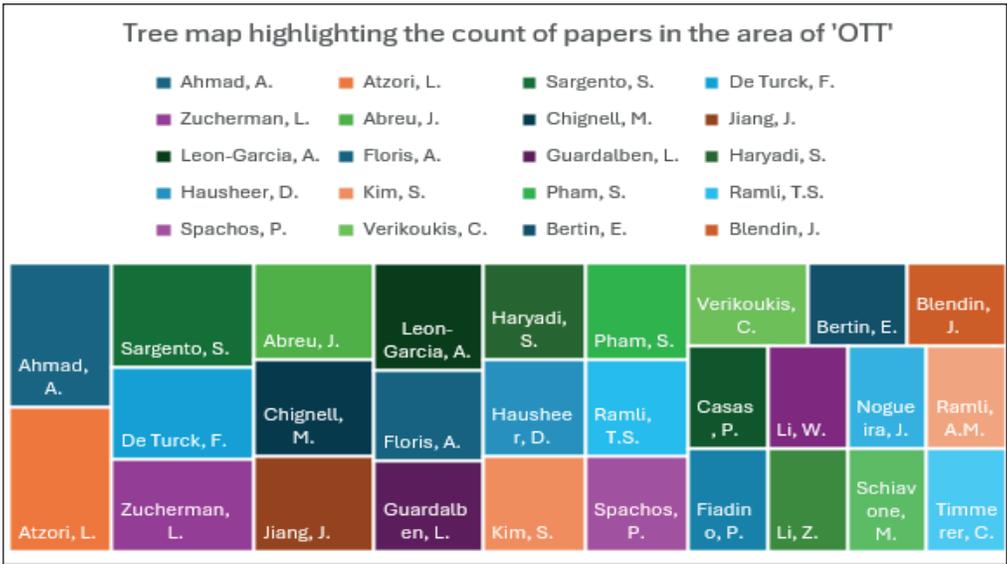


Fig. 4: Tree map highlighting the count of papers by various prominent authors in the area of 'OTT'

37, 254 patents were also found to be filed/granted from 2008 to 2024 on Scopus database. Most of the patents came from United State of America with clear indication that although the research publications have been on the lesser side in the field of OTT but there has been definitely a huge focus on the innovation and filing patents.

Only 68 documents were found which had used keyword, AI in their work.

Only 18 articles were found with the following query in Scopus, which indicated work on OTT and AI in the education field -

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((TITLE-ABS-KEY(OTT) AND PUBYEAR > 2007 AND PUBYEAR < 2026) AND (ai) AND (education) AND (EXCLUDE (SUBJAREA,"MEDI") OR EXCLUDE (SUBJAREA,"BIOC") OR EXCLUDE
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(SUBJAREA,"PHYS") OR EXCLUDE
(SUBJAREA,"PHAR") OR EXCLUDE
(SUBJAREA,"MATE") OR EXCLUDE
(SUBJAREA,"NEUR") OR EXCLUDE
(SUBJAREA,"AGRI") OR EXCLUDE
(SUBJAREA,"CENG") OR EXCLUDE
(SUBJAREA,"IMMU") OR EXCLUDE
(SUBJAREA,"NURS") OR EXCLUDE
(SUBJAREA,"DENT") OR EXCLUDE
(SUBJAREA,"VETE") OR EXCLUDE
(SUBJAREA,"Undefined") OR EXCLUDE
(SUBJAREA,"EART") OR EXCLUDE
(SUBJAREA,"ENVI") OR EXCLUDE
(SUBJAREA,"ENER") OR EXCLUDE
(SUBJAREA,"CHEM")
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Lesser count of research articles but such a high count of patents clearly establishes that academic and research fraternity has been mainly elusive to this tremendous growth and has not really focused on publishing any high-quality research articles in this field.

## Adoption of OTT education platforms by Indian users

We carried out an analysis with the help of Zoho Surveys and tried to understand the end user's preferences to learn from online OTT education platforms. Users were given choice to pick up more than one option. Figure 5 brings forth the results of our survey, where it is clearly established that Coursera rules the roost as around 71 % users indicated their learning preference on that platform.

(Shalini, 2024) in their work explore how Information and Communication Technology (ICT) is being used in secondary schools in Meghalaya to improve education. While ICT tools like computers and the internet are recognised as important for providing quality education, teachers face challenges such as poor infrastructure,

lack of resources, and limited training. The study found that teachers mainly use ICT for lesson planning and online work, but less so for tracking student progress. To successfully use ICT to improve education in Meghalaya, the study emphasises the need for better resources, training, and support for teachers.

(Jha and Harichandan, 2022) have also studied the growth of MOOCs in India. According to them, MOOC platform SWAYAM indigenously developed by Indian Government in 2017 is acting as great bridge to fill the digital divide. It was started in 2017 and builds on earlier projects like NPTEL and MookIT. It offers a wide range of courses with a focus on all-around learning. Even though it has problems like not having enough tools and internet access, SWAYAM could change the way India teaches by making learning more flexible and fun.

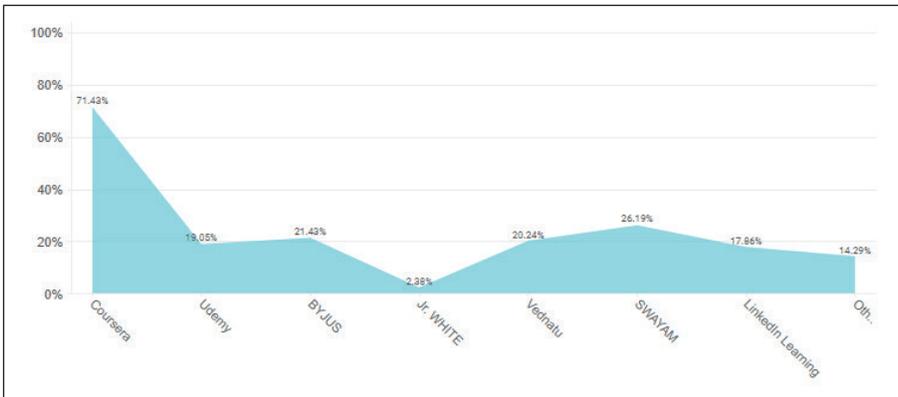


Fig. 5: Plot indicating the preferred OTT education platform from the data analysed

We have gathered and are in the process of analysing many other results like learning preferences, willingness to pay the range of fee per course, reasons for learning from OTT apps and perception about future of OTT apps using advanced machine learning tools. However, that research work will be a subject matter of our next piece of research works.

### Future Scope-

Our recent paper highlights a significant gap in the existing body of research concerning Over-The-Top (OTT) educational applications. To illustrate this, the paper includes a comprehensive bibliographic analysis of the research conducted in the field of OTT education over the past fifteen years.

We believe this paper will serve as a valuable resource for researchers, encouraging further exploration into this understudied domain. Moreover, it aims to inform users and learners about the potential benefits of adopting OTT educational apps for their learning needs. Increased utilisation of these apps can contribute to the Viksit Bharat@2047 initiative and is expected to positively impact the Gross Enrolment Ratio (GER) of the country. Furthermore, the integration of Artificial Intelligence has played a crucial role in enhancing these applications by enabling personalised learning experiences, improving student engagement, and diversifying content offerings.

## Conclusion

There has been a significant growth in the adoption of Over-The-Top (OTT) services, especially in the education sector, with the potential to make a difference in the lives of learners who cannot afford to attend premium educational institutes. However, there has been a lack of focused effort to

understand and analyse the combined growth of Artificial Intelligence (AI) and OTT in a scientific manner. The paper presents a detailed bibliographic analysis of research papers published in the field of OTT education in the last 15 years. The analysis reveals that there have been a limited number of research studies in this field, with most of them being basic and limited to specific cities or countries. The paper also presents the results of a survey conducted with about 1900 end users of OTT applications in the education space, which indicates a strong need for further research in this field. Findings of the paper provide valuable information for policy makers and education app developers to benefit the academic community at large. In conclusion, the OTT educational app market is undergoing a very fast growth, driven by the increasing demand for flexible, accessible, and personalised learning solutions. Continued research and development in this field will likely lead to more adoptable and effective applications of OTT educational apps in shaping the future of online education.

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