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## Article

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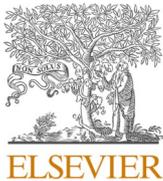
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# Exploring audience engagement with ChatGPT-related content on YouTube: Implications for content creators and AI tool developers

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## ABSTRACT

The emergence of ChatGPT in the broader field of generative artificial intelligence (AI) has sparked scholarly discourse on its utilization in various disciplines. Yet, a significant void exists in our understanding of the dynamics of consumer engagement with content creators producing ChatGPT-related content. Therefore, the present study aims to delineate how ChatGPT-related content garners consumer engagement on YouTube. Data from 100 YouTube videos amassing an aggregate of 65 million views on ChatGPT were extracted using three application programming interfaces (APIs), namely, VidIQ, Tubebuddy, and SocialBlade. We subsequently contrasted this dataset with data from 200 other videos produced by the same creators. The data were analyzed using one-way ANOVA, multigroup SEM, and comparative line graphs. Employing the Uses and Gratifications (U&G) theoretical framework, our results indicate that innovative content such as ChatGPT-related videos garners more engagement than other content types from the same YouTube channels. Intriguingly, this study finds that ChatGPT-focused content exhibited diminished sensitivity to channel subscriber counts, with channels having fewer subscribers achieving higher viewership numbers. Furthermore, ChatGPT-related content induced a surge in new subscribers to the channel compared to the other content types. The present study pioneers the investigation of audience engagement with ChatGPT-related content by juxtaposing it with other content from the same YouTube channels. We also explicate the relationship between content sensitivity and extant subscriber counts. The present study provides vital insights and implications for a diverse audience, including content creators, developers of AI tools, advertisers, and content publishers.

## 1. Introduction

The exponential increase in queries and YouTube video views for ChatGPT-related informational content over the past few months indicates substantial audience interest in this emerging technology. There are parallels between the interest in artificial intelligence (AI) technologies like ChatGPT and previous viral trends such as Crypto-currency (Savas, 2021), Metaverse, and 5G. ChatGPT is still in development stage and is enveloped in obscurity, which may fuel its social media intrigue.

OpenAI's ChatGPT is a cutting-edge language model for generative artificial intelligence. In recent years, ChatGPT has grown at an unprecedented rate in terms of subscribers and popularity to become a significant platform. In just three months, it garnered >100 million users; in April 2023, it crossed 1.8 billion visits (Nerdynav, 2023). This

innovation is widely regarded as a transformative instrument that has the potential to profoundly alter operational methodologies in a variety of industries and fields. Notably, there has been an increase in conversations on social media platforms about the applicability of ChatGPT to various spheres of life. Simultaneously, the academic discourse on generative AI and assistive tools such as ChatGPT has substantially expanded since its inception. Nonetheless, most current research emphasizes ChatGPT's utility in academic contexts (Elbanna & Armstrong, 2023; Li et al., 2023a, 2023b; Malik et al., 2016). The business landscape, especially within the marketing realm, is set to experience drastic transformation in the coming years as the integration of ChatGPT becomes prevalent in day-to-day activities. In a preliminary study, Dwivedi et al. (2023) suggest that ChatGPT will influence productivity in all fields of life, including education, business, management, and marketing. Furthermore, they highlighted the potential implications of

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ChatGPT in customer service, marketing research, content marketing, and content creation.

From a digital marketing perspective, the incorporation of ChatGPT in content creation and consumption is highly relevant. Always attuned to emergent trends, content creators frequently capitalize on the newest phenomena to curate new content. Consequently, the rise in popularity of ChatGPT has resulted in a significant increase in the number of videos on platforms such as YouTube. These videos explore how ChatGPT can be adapted and utilized for many applications and duties. For instance, users search for using ChatGPT for coding purposes and how to make money using ChatGPT.

YouTube has received a flurry of ChatGPT-related video content and user interest as the statistics of top 100 videos received 65 million views in just a couple of months. The statistics presented were compiled using social media analytics tools such as Tubebuddy and VidIQ. These tools tracked and ranked the top 100 videos related to ChatGPT, based on a variety of keywords and video tags. With more and more ChatGPT-related videos appearing on YouTube, researchers are curious about the phenomenon's effect on audience engagement. The increasing prevalence of ChatGPT-themed videos is attributable to a more significant comprehension disparity regarding generative AI and ChatGPT. It is pertinent to acknowledge that, upon ChatGPT's release in November 2022, many users lacked the necessary foundational knowledge to utilize it effectively. As a result, a substantial portion of the consumer base turned to platforms such as YouTube for clarification on its capabilities and potential applications in commonplace situations. The strong interest of users in ChatGPT-related content is evident from the keyword search volume, which exceeded 47 million searches in February 2023. This strong and ever-increasing interest presented a unique opportunity for content creators to produce material that provides users with foundational knowledge regarding the practical applications of ChatGPT.

Against this backdrop, the current study aims to investigate consumer engagement behavior with ChatGPT-related content published on YouTube. The advent of ChatGPT, a generative artificial intelligence (AI) technology, has generated immense interest around the world. YouTube is an ideal platform for engagement with novel developments such as ChatGPT related. We are particularly interested in understanding online audience engagement by measuring the views, likes, and comments on the videos related to ChatGPT. In addition, this study seeks to explicate the effect of existing subscribers on attracting new audiences and to decipher the relationship between subscriber count and audience engagement indicators. To accomplish this, the present study compares the consumer engagement metrics (e.g., views, likes, comments, subscribers) of ChatGPT-related content with the other content published by the same content creator in order to address the identified research gaps. This comparison enables the present research to investigate which form of content, ChatGPT or otherwise, attracts the most significant number of YouTube channel subscribers, views, likes, and comments. This research contributes to a better understanding of the impact of ChatGPT-related content on engagement and subscriber acquisition within the context of YouTube channels by investigating these factors.

This study contributes significantly to the academic discourse in multiple ways. First, it pioneers the investigation of consumer engagement with ChatGPT-related content and provides a theoretical understanding of engagement with novel and innovative content on YouTube. Second, it is also the first attempt to perceive the relationship between content sensitivity and extant subscriber counts. Third, it innovates by quantifying the increase in subscribers attributable to specific content. Finally, the present study provides vital insights and implications for a diverse audience, including content creators, developers of AI tools, advertisers, and content publishers.

## 2. Literature review

The advent of groundbreaking technologies invariably piques human

curiosity. This curiosity often manifests as increased audience engagement with relevant content in the social media era (Hanafizadeh et al., 2021; Hussain et al., 2021). Notably, ChatGPT-related YouTube videos have experienced a significant uptick in popularity in recent months. In contrast to its antecedents, it is a general-purpose technology with various applications, making it accessible to a larger audience. Both ChatGPT and previous IT trends are disruptive technologies with the potential to revolutionize their respective industries, thereby attracting significant social media attention. As ChatGPT matures, its efficacy in a variety of industries is likely to become more apparent, boosting user interest, especially across various social media platforms.

### 2.1. The emergence of ChatGPT

Generative AI encompasses a suite of AI techniques and models designed to generate novel content, spanning text, images, audio, and videos (Peres, Schreier, Schweidel, & Sorescu, 2023). Generative AI models can generate new data that was not explicitly provided during their training. A large language model by OpenAI called ChatGPT uses the principles of generative AI to produce conversationally human-like responses in the natural language processing and conversation domain (Eysenbach, 2023). OpenAI is credited with creating ChatGPT, which is recognized for its remarkable ability to generate responses that closely resemble human communication (Rudolph et al., 2023). The platform gained one million users within five days of its launch and surpassed 100 million in less than three months. In comparison, reaching this milestone took TikTok 9 months, Instagram 30 months, and Spotify 55 months (Garfinkle, 2023).

ChatGPT, frequently referred to as a conversational or generative AI chatbot, engages in dialogue and generates text outputs in response to user inquiries. When users interact with ChatGPT, they input a message or prompt, and the model generates a response based on its acquired knowledge and the provided context. The platform's straightforward and user-friendly interface enables users to input questions on a variety of subjects or disciplines. It can also generate text (e.g., content creation, creative writing), provide summaries, and facilitate the translation of text into multiple languages (Lund et al., 2023).

ChatGPT's emergence has generated much curiosity among users regarding its applications and potential uses. It has been observed that various social media platforms including YouTube that offer various "how to" videos are flooded with content about ChatGPT. Users are eager to learn how to effectively use ChatGPT to achieve various goals, such as generating money, creating content, and gaining new skills. Effectively using ChatGPT is one of the topics of interest. Researchers from diverse fields recognize ChatGPT's potential to increase productivity in industries such as education, digital marketing, finance, hospitality, tourism, and information technology as well as its limitations, such as disruptions to practices, privacy and security risks, and concerns about biases, misinformation, and misuse (Dwivedi et al., 2023). Users are interested in the potential for meaningful conversations and learning helpful information by utilizing ChatGPT's conversational capabilities. Anecdotal evidence suggests that internet users often require assistance navigating ChatGPT's user interface, responding to input prompts, and obtaining optimal responses from the tool. In response to this learning need, various "how-to" tutorials have emerged to assist users in understanding and using ChatGPT effectively. The world's largest video streaming platform – YouTube – is naturally an excellent venue to learn about ChatGPT, as it contains a wide variety of tutorials, guides, and expert commentaries.

### 2.2. YouTube and ChatGPT

Social media platforms have spawned a new creative industry; social media entertainment, which departs from traditional intellectual property models to produce interactive and original content (Craig and Cunningham, 2019). As one of the largest social entertainment

platforms, YouTube has over two billion monthly active users (Gomez, 2023). It is indeed “one of the most powerful digital media platforms” (Burgess and Green, 2018, p.1). It also serves as the world’s second most visited site used as a search engine to find content (Gomez, 2023). Thus, we chose YouTube as the focus of our research because of its immense popularity and its place as the dominant video-sharing platform.

Since its inception in 2005, YouTube has been a powerful force in the development of popular culture across the world. Over 1 billion hours of YouTube videos are viewed daily (Gomez, 2023). The platform has emerged as a “global broadcaster,” making it possible for anyone with a camera and an internet connection to create and share videos, eliminating the entry barriers in traditional media (Khan and Malik, 2022). YouTube has enabled a new cultural phenomenon that includes how-to videos, music, vlogging (video blogging), and much more. YouTube’s global user base means the site’s content covers various genres, formats, and subject matters. YouTube is the largest video-sharing platform in the world because it gives people a place to make and share videos about anything they choose, from lifestyle and gaming to entertainment, education, and technology. YouTube’s meteoric rise and growing dominance in the digital content market can be directly linked to the platform’s many tools for users to create and share their content.

YouTube is also well known for skill acquisition (Iftikhar et al., 2019), informal learning (Lange, 2018), and as a formal tool for education (Maziriri et al., 2020), especially ‘how-to’ videos. About 50 % of YouTube users indicate that the site is essential for learning new things they have never done before (Smith, 2020). YouTube is frequently cited as one of the most important instructional technology channels for learning and education delivery (Curran et al., 2020; Jones and Cuthrell, 2011).

Owing to YouTube’s immense reach and potentially influential role in the dissemination of educational content, learning resources, and various forms of information, there is a strong interest in utilizing the platform for sharing videos aimed at enhancing understanding of generative AI and ChatGPT. The number of YouTube channels covering a wide variety of topics related to language learning with the use of generative AI technologies such as ChatGPT have surged in a very short amount of time (Li et al., 2023a). YouTube has become a valuable resource for a variety of “how-to” videos (Chau, 2010), including those focusing on maximizing ChatGPT’s capabilities and learning about the best ways to use the tool. Numerous YouTube channels specializing in artificial intelligence and machine learning provide comprehensive tutorials on how to use ChatGPT. These guides encompass topics such as user interface, input methods, and methods for obtaining high-quality responses. By utilizing this abundant content, users can maximize the capabilities of using ChatGPT and other generative AI tools more effectively.

An increasing number of content creators, ranging from AI specialists to enthusiasts, produce informative and engaging videos exploring the nuances of effectively employing generative AI. For example, a simple YouTube search reveals several videos and channels that provide tutorials on how to use ChatGPT for different applications like content creation, data analysis, and even language learning. Hence, with the emergence of AI content creators are experimenting with new methods of content production and distribution. YouTube’s biggest potential lies in its ability to make content creation and distribution more open and fairer. The creation and sharing of content by users are the driving force behind YouTube’s enormous growth. Very recently, there has been explosive growth in videos about the best tips and tricks for effective use of ChatGPT. On YouTube, a search for “ChatGPT tips and tricks” returns >14.6 million results, a significant number of which have been posted in the most recent few months (Google, 2023).

YouTube functions as a catalyst for engagement and interaction on a global scale as content creators explore new horizons with the advent of AI. Various metrics, such as video views, likes, comments, and subscriptions, reflect the level of audience engagement and resonance to reveal the impact of content creation. YouTube’s engagement features

allow users to actively participate in the discourse by voicing their opinions, posing questions, and sharing their experiences concerning ChatGPT. The following section will shed light on audience/user engagement literature and analyze the metrics that indicate user interest and the lively conversations that influence the community’s understanding and application of ChatGPT.

### 2.3. Audience engagement on YouTube

Social media engagement is a multidimensional concept that is vital in the building of continued customer relationships and loyalty (Lim and Rasul, 2022). In scholarly discourse, user engagement (general internet users), customer engagement (brand-focused), and audience engagement are often employed interchangeably. These varied terms encompass a range of contexts. For this research study, the term “audience engagement” will be used as an umbrella term to encapsulate all forms of online user interactions. Audience engagement, also known as user engagement, is a concept that captures the active participation of users in creating value and knowledge within online communities (Brodie et al., 2013; Hussain et al., 2021; Mvondo et al., 2023). Brodie et al. (2013) discuss “customer engagement” within brand communities, particularly from a marketing standpoint, and interchangeably use “customer” and “consumer” engagement to describe interactions within brand communities in the marketing literature. Mollen and Wilson (2010, p. 5) define consumer engagement in terms of a cognitive and affective commitment to an active relationship with a brand, as represented by websites or other digital entities that convey brand values. Khan (2017) extends the concept of engagement beyond the confines of business and marketing to include the broader fields of communication and media, opting for the term “user engagement.” Recent literature evolves this terminology further, preferring “audience engagement,” a term that more inclusively covers users, consumers, and customers within online environments. Audience or user engagement refers to user-initiated actions that contribute to the “co-creation of value” and knowledge within an online community (Brodie et al., 2013; Hussain et al., 2021; Mvondo et al., 2023). A typical YouTube channel provides video content and text as comments (Khan and Malik, 2022; Ladhari et al., 2020; Sokolova and Perez, 2021). On YouTube, there are both participation and consumption modes of user engagement (Khan, 2017). Content creation is an engagement type that emerges from participation in which creators contribute video content, whereas content consumption is an engagement which stems from consumption of the content in which viewers seek entertainment and information (Buf and Ștefăniță, 2020; Kulikovskaja et al., 2023; Sorensen and Drennan, 2017). Metrics such as video views, comments, shares, uploads, likes, and dislikes have been the focus of research on YouTube user engagement (Khan, 2017; Möller et al., 2019; Nerghes et al., 2018). Utilizing the Uses and Gratifications (U&G) framework, Khan (2017) examined the motivational factors that drive user participation and content consumption on YouTube, thereby shedding light on social media engagement.

Mollen and Wilson (2010) define online customer engagement as a cognitive and affective commitment to brand and customer relationships via digital media, with an emphasis on brand value demonstration. Engagement has been viewed as a theoretical stage in which a relationship meets the criteria of satisfaction and emotional connection, whereby a customer contributes direct or indirect value to a company (Clement Addo et al., 2021; Hussain et al., 2021; Pansari and Kumar, 2017). Direct engagement involves product or service purchases, while indirect engagement, referred to as intangible engagement, encompasses activities such as sharing, influencing, and providing feedback (Junaid et al., 2020; Khan, 2017). Likes, comments, and shares indicate audience engagement with YouTube videos, revealing the nature and scope of user interactions.

Content-related factors generally have a significant impact on engagement levels. Specifically, videos with audio, carousel posts with multiple images, and posts with hashtags were observed to generate

higher levels of engagement, as measured by 'likes' (Cuevas-Molano et al., 2021). YouTube likes symbolize positive viewer feedback, signifying approval or enjoyment of the content (Munaro et al., 2021). Likes reflect the level of gratification, value, or entertainment the video provides to the viewer (Khan, 2017). The greater the number of likes, the greater the indication of viewer engagement and contentment. However, liking a video takes less cognitive effort than commenting, which reflects cognitive engagement with the video (Munaro et al., 2021).

Comments enable viewers to actively participate in conversations and discussions about the video (Yoon et al., 2018). They allow viewers to express their thoughts, opinions, and feedback. Comments contribute to community development, encourage dialogue, and facilitate viewer-creator interaction (Khan, 2017). Creators can directly interact with their audience by replying to comments.

Shares play a crucial role in amplifying the dissemination of a video beyond the viewer's immediate circle, serving as an indicator of the content's perceived importance and value. When viewers share a video across their social media platforms or forward it directly to their peers, it serves as an implicit endorsement of the video's quality and relevance (Khan, 2017). This action increases the video's visibility and potential to attract a larger audience, enhancing its overall impact and resonance within the digital ecosystem.

Identifying the antecedents of engagement has been the focal point of a large number of studies investigating audience engagement on various online platforms (Bowden et al., 2018; Hollebeek et al., 2016). Within online communities, researchers have sought to identify the underlying factors that motivate user participation, interaction, and the creation of value (Islam et al., 2019). To acquire insight into the determinants of engagement, researchers have examined motivational factors, content characteristics, platform features, and user behaviors. For instance, video type e.g., shorter videos on YouTube typically have higher engagement and likes (Yang et al., 2022) which suggests that video format, duration, content type and trending topic may influence consumer engagement on YouTube. Some viral YouTube videos garner a very high level of engagement, especially regarding shares.

#### 2.4. Uses and gratifications (U&G) theoretical framework

The Uses and Gratifications (U&G) Theoretical framework is a widely applied theoretical framework within the field of media research, which aims to elucidate how individuals utilize media in order to satisfy particular needs or gratifications (Katz et al., 1973; McQuail, 1983). The theory is grounded in psychological and sociological frameworks and seeks to elucidate the underlying motivations for media consumption and the subsequent good and bad outcomes that result from it (Katz et al., 1973; Rubin, 2002).

Based on the U&G framework, individuals who consume media are considered active audiences who actively pursue the satisfaction of diverse needs through their selection of media content (Livingstone, 2003; McQuail, 1983). This analytical framework is particularly valuable for comprehending the intricacies of online user engagement, particularly concerning developing technologies such as ChatGPT, as demonstrated on the YouTube platform.

The main focus of this study is to examine the underlying reasons for media consumption as defined under the U&G framework (Katz et al., 1973). McQuail (1983) further expounded upon this concept by delineating four primary rationales for media consumption: the acquisition of knowledge, the construction and expression of personal identity, the facilitation of social integration and interaction, and the pursuit of enjoyment.

Within the domain of YouTube, content connected to ChatGPT functions as a platform that is both innovative and instructive, exhibiting a solid alignment with the conceptual domains of the Uses and Gratifications (U&G) framework. The increased degree of user engagement observed with ChatGPT content, compared to other types of content available on similar platforms, may be ascribed to the gratifications

derived from novelty and the pursuit of information (Cheung et al., 2011; Wu et al., 2010). The adoption trends of certain inventions (such as ChatGPT) are influenced significantly by their distinctive characteristics (Rogers, 1995). The attractiveness of ChatGPT extends beyond standard measurements like channel popularity or subscriber numbers.

Numerous research studies have emphasized the effect of informativeness, interaction, and entertainment on user intention or behavior (Ahiabor et al., 2023; Hamari et al., 2019; Khan, 2017; Malik et al., 2016). An investigation conducted by Hoşutut (2010) revealed that innovation was recognized as a motivating factor within the U&G framework concerning the use of mobile phones. In a research conducted by Li et al. (2023b), the U&G framework was employed to investigate the underlying variables, such as creativity, immersion, and real-time interaction, that serve as motivators for viewer value co-creation behavior.

Upon synthesizing these studies using the U&G framework, it becomes apparent that the factors of novelty, innovativeness, and information-seeking play a significant role in motivating individuals to engage with ChatGPT-related material on the YouTube platform. This narrative emphasizes the importance of original and helpful material in engaging audiences, thereby creating a favorable atmosphere for maintaining current members and recruiting new ones, regardless of the channel's initial number of subscribers.

Various factors influence virality, which is a complex and unpredictable phenomenon. However, some research suggests factors such as emotional appeal, originality, relatability, timeliness, influencer participation, shareability, and unexpected outcomes contribute to a video's viral potential (Leonhardt, 2015; Nafees et al., 2021; Yang et al., 2022). Videos that elicit strong emotions provide original and novel content, resonate with a broad audience, tap into current trends, and contain unexpected elements, which have a greater chance of capturing widespread attention and generating rapid viewership. In other words, novel and innovative content attracts greater attention on social media. Hence, in line with the U&G theoretical framework's innovation motive, we extend the following hypothesis:

**Hypothesis H1.** Content related to ChatGPT generates greater engagement (measured in views, likes, and comments) than other content published on the same YouTube channel.

#### 2.5. Subscribers and engagement

Subscriptions represent a long-term commitment and genuine interest in the work of content producers. When users subscribe to a YouTube channel, they indicate their desire to receive regular updates from the channel's originator. Subscriptions indicate the presence of a dedicated and loyal audience. In line with the U&G framework, we argue that the novelty and innovation factor serve as a potent motive that can lead to greater engagement in the form of channel subscriptions. It may thus be argued that subscribers are more likely to engage with new videos, provide feedback in the form of comments, and actively participate in the creators' community. This enduring participation lays the groundwork for ongoing engagement and relationship-building. Even the willingness to subscribe positively impacts consumer engagement (Auditya and Hidayat, 2021).

The consideration of multiple metrics is critically important when assessing a video's performance. One could argue that a positive correlation exists between the number of views a YouTube video receives and the number of channel subscribers. As the number of subscribers reflects a channel's popularity and follower base, higher subscriber counts can be a reliable indicator of a video's popularity. In addition, the platform's recommendation algorithm content dissemination is based on user preferences, viewing history, and platform interactions, resulting in a highly personalized experience. It is worth noting that the virality of content may not necessarily hinge on the number of the channel's subscribers. The intrinsic value of the content plays a central

role in driving its consumption and engagement (Müller and Christandl, 2019). Notably, unique content on YouTube can sometimes propel videos from channels with relatively few subscribers to viral status. Therefore, the study aims to shed light on the dynamics of subscriber impact and engagement concerning ChatGPT-related content on YouTube channels. Hence, we seek to test the following hypothesis:

**Hypothesis H2.** The engagement with ChatGPT-related content on YouTube is less influenced by the number of subscribers compared to other content on the same channel.

Subscribers of a YouTube channel indicate the channel's worth, which is why content creators persuade the viewers to subscribe to their channel. Content creators use multiple motivational factors to instigate viewers to engage with the channel. However, the viewers may not be interested in subscribing a channel unless they find the content valuable. How-to-content, trending topics, and viral content may be critical in attracting new subscribers. Considering the buzz of ChatGPT, the present study intends to reveal the role of how-to-content and trending topics in bringing new subscribers to a YouTube channel. It advances the following hypothesis:

**Hypothesis H3.** ChatGPT-related content results in a given YouTube channel's highest influx of new subscribers.

Having established the research hypotheses regarding audience engagement with ChatGPT-related content on YouTube, we will utilize the Uses and Gratifications theoretical framework as a conceptual framework to elucidate the factors that contribute to increased levels of engagement in ChatGPT videos on this particular platform.

### 3. Methodology

The present study analyzes YouTube videos published about ChatGPT and compares the audience engagement on these videos with other videos published by the same YouTube channel. For this purpose, we extracted data from YouTube with the help of three different application program interfaces (APIs) i.e., VidIQ, Tubebuddy, and Social-Blade as well as openly available video metrics on YouTube. We collected this data in the last week of February 2023 and first week of March 2023. We started the video search with generic keywords e.g., 'ChatGPT', 'Chat GPT', 'What is ChatGPT' and 'How to use ChatGPT'. Selection of these were based on three criteria. First, three expert researchers working on social media analytics and information/communication technologies discussed the possible keywords that can be used to find video content on YouTube. Second, the selected keywords in the first step were used to search the video content on YouTube. The videos appearing on these keywords were then tracked with Tubebuddy for each keyword based on the video's ranking. Tubebuddy gives the top 20 videos that rank on a particular keyword; therefore, we started preparing the list of top videos that appeared on the keywords. Third, Tubebuddy and VidIQ also show the tags (keywords with an addition of a hash sign) used by the content creators. We used those tags to further track the videos ranked on those tags. This process generated a list of videos that consistently appeared under various keywords and tags. Consequently, we opted to retain the top 100 videos associated with different keywords that focused ChatGPT-related content.

The video metrics were then tracked for these top 100 videos. We extracted data for a range of metrics related to each video including number of views, likes, comments, date of publication, duration of the video, gender of the content creator, and language of the content. Similarly, we also extracted data about the YouTube channel that published the video related to ChatGPT. We documented the information related to the number of subscribers, total videos published by the channel, country of origin of the channel, and new subscribers gained by the channel in the past 30 days. These YouTube channels apparently belong to a range of content categories but predominantly relate to computer science, information technology, and trending topics. We

noticed that content creators and publishers of ChatGPT-related content were not specifically producing content related to technology and generative AI, instead, they find ChatGPT an interesting topic to create content. For example, CNN which publishes news has produced a video about ChatGPT which explains how this generative AI tool is changing the way we conduct an interview and how it will reshape the future. We also analyzed the videos published on these channels and ranked them according to their number of views in descending order and prepared a list of top videos on those channels and videos at the 10th place on the channel's list of published videos. There were some channels whose top viewed video was related to ChatGPT content so we included their 2nd most viewed video for the comparison purpose. Afterward, we tracked the same metrics for these videos that we tracked for ChatGPT-related videos to compare the content. We also did some manual calculations using Excel formulas for the data that were not directly available. In total, we analyzed 300 videos i.e., 100 videos related to ChatGPT-content, 100 top viewed videos, and 100 videos at the 10th place of the top viewed videos list of the same channel.

Table 1 shows the descriptive statistics for the analyzed videos and their respective YouTube channel statistics. The table indicates that the ChatGPT-related videos received 648,087 views on average. Similarly, each video received 17,163 likes and 1292 comments on average. The average duration is 13:17 min and the average days of video publication are 66 days. Each YouTube channel published 3678 videos on average and had 1,400,531 subscribers as well as each channel gained 34,378 subscribers in the past 30 days. (See Fig. 1.)

Table 2 indicates that 76 % of the channels are registered in only three countries. The United States of America has the highest number of channels followed by Australia and the United Kingdom respectively. Similarly, 93 % of the videos are created using the English language. There may exist a huge number of videos published in languages other than English, but those videos did not rank for the keywords we searched on YouTube. All the keywords we used were in English, so we assume that the video content published in other languages may not optimize their videos for these keywords. Surprisingly, 92 % of the videos are created by male creators and female creators only created 7 % of the content related to ChatGPT.

We also calculated the keyword search volume for the relevant keywords using the aforementioned APIs. Table 3 reveals that the search for ChatGPT-related keywords received 47 million search volumes in a single month. We document monthly search volume because the APIs provide details only for the past month's search terms. Table 3 shows that consumers used very simple terms like 'chatgpt', 'chat gpt', 'Ai' and 'Gpt' to search for ChatGPT-related content on YouTube. Other than these simple words, consumers searched how to make money using

**Table 1**  
Descriptive statistics.

Video descriptive statistics	ChatGPT video	Top video	10Th place video
Total Videos Analyzed per Category	100	100	100
Total Video Views	64,808,739	522,028,058	125,532,064
Average Views per Video	648,087	5,220,281	1,255,321
Average Views per Day	9984	7570	1949
Average Likes per Video	17,163	104,052	23,364
Average Comments per Video	1292	7117	3676
Average Duration of Video	13:17	11:17	11:21
Average Days of Publication	66	903	779
<b>Channel Descriptive Statistics</b>	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
Videos Published per Channel	3678	05*	158,209
Number of Subscribers per Channel	1,400,531	1020	15,200,000
Subscribers Gained in Last 30 Days per Channel	34,378	310	300,000

\* There were only three channels that have <10 videos, therefore, we analyzed their last video as a substitute of 10th place video.

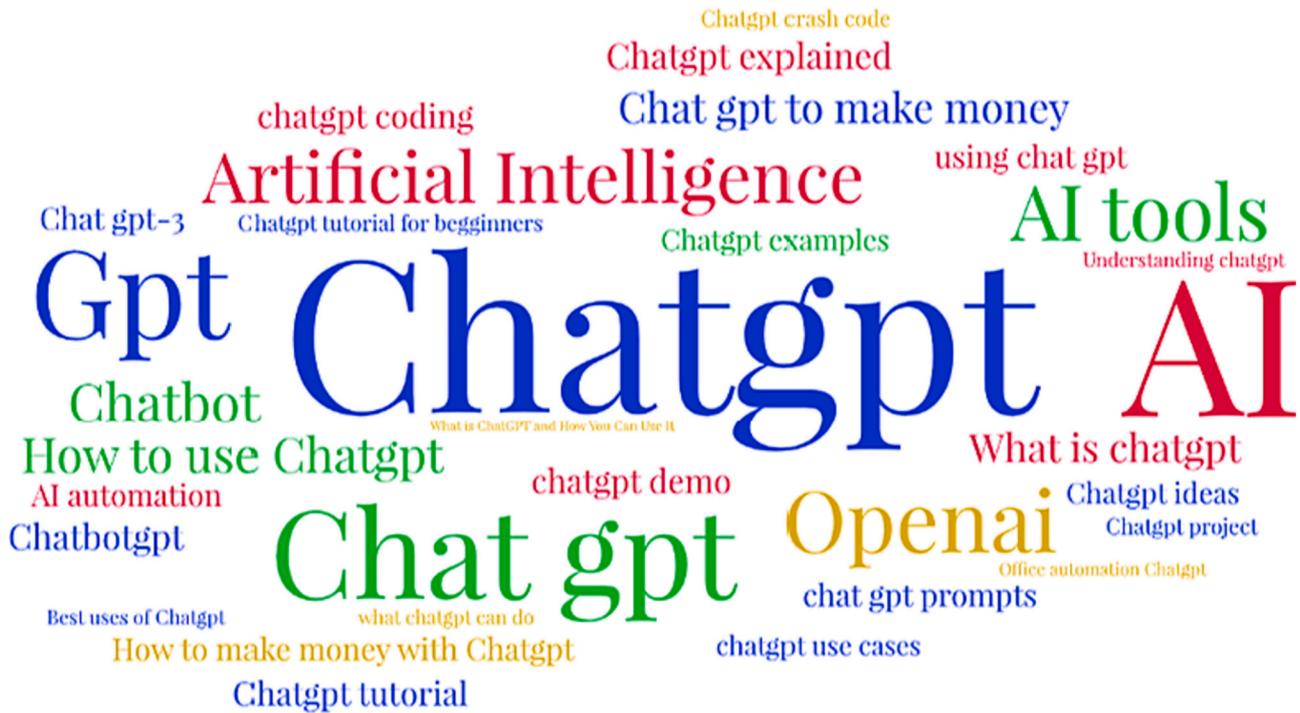


Fig. 1. Word-cloud relative to keyword search volume.

**Table 2**  
ChatGPT video creators' statistics.

Factor		Number
Channel Country	United States of America	47
	Australia	18
	United Kingdom	11
	Canada	2
	India	2
	Ireland	2
	Nigeria	2
	Norway	2
	United Arab Emirates	2
	France	1
	Germany	1
	Pakistan	1
	Spain	1
	Ukraine	1
Unidentified	7	
Language used in the Video	English	93
	Other	07
Content Creator	Male	92
	Female	07
	Both	01
	<b>Total</b>	<b>100</b>

ChatGPT, learning skills with ChatGPT, and tutorials.

#### 4. Results

The research hypotheses of the present study are tested using three techniques – i) one-way ANOVA, ii) multigroup SEM and iii) mapping the data on comparative line graphs to show how the ChatGPT-related content differs from the content published on the same channel. We compared different factors of the data to address each research hypothesis which provides a clear and comprehensive picture of customer engagement. For instance, to test the first hypothesis, we compared per day views of three different videos published at the same channel i.e., i) video about ChatGPT, ii) top video of the channel and iii) video at the 10th place. To find the top video and video at the 10th place of the

**Table 3**  
Keyword search volume.

Search terms / keywords	Search volume
Chatgpt	24,977,970
Chat gpt	10,394,618
AI	4,833,619
Artificial intelligence	1,071,682
How to use Chatgpt	1,031,796
Openai	667,911
Gpt	660,964
Chat gpt to make money	632,046
AI tools	614,506
How to make money with Chatgpt	563,039
Chatgpt explained	498,024
What is chatgpt	416,578
Chatgpt tutorial	215,035
chat gpt prompts	116,114
Chatbot	113,653
chatgpt coding	88,993
Chatgpt examples	56,159
chatgpt demo	21,749
using chat gpt	17,896
Chatgpt tutorial for beginners	16,342
chatgpt use cases	12,830
AI automation	12,047
Chatgpt ideas	11,629
what chatgpt can do	5795
Understanding chatgpt	4705
Chatgpt crash code	4244
Chatbotgpt	2656
What is ChatGPT and How You Can Use It	2642
Best uses of Chatgpt	2381
Chat gpt-3	2109
Chatgpt project	1925
Office automation Chatgpt	1365
<b>Total Search Volume</b>	<b>47,073,022</b>

respective channel we sorted the ranking of these videos with Social-Blade. Afterwards, we calculated the views per day from each video's date of publication to the date of data collection. We compared the top and 10th place videos to make the comparison clearer for understanding

as each channel published 3678 videos on average. Similarly, we chose to compare views per day because some videos were published years ago (average days of publication: Top video = 902 days, 10th place video = 779 days) whereas videos about ChatGPT started appearing in November 2022 (ChatGPT average days of publication = 66 days). To standardize this gap, we compared views per day.

Among these videos we want to present the position of the video that talks about ChatGPT. Fig. 2 shows the comparison where the horizontal axis represents the number of subscribers from lowest to highest (left - right) and vertical axis represents the number of views per day. The graph indicates that videos about ChatGPT attracted more viewers than the top viewed video of the channel and video at the 10th place. Though, at some channels the top video has more views than ChatGPT but the views of the 10th video remain lower. Similarly, the trend lines indicate that the views of ChatGPT videos remain higher than other videos. These results are really surprising as 3678 is the average number of videos published by each channel so taking this into perspective, we can say that ChatGPT outclassed the video views on YouTube. The content about ChatGPT is more popular than any other content on the same channel which supports our Hypothesis H1.

To further validate the findings, we performed a one-way ANOVA test by comparing three types of video content published by the channel. The results reveal that ChatGPT-related content has the highest number of views per day as compared to other content. These results presented in Table 4 are significant as shown by the values of F-statistics = 14.665 and  $p = 0.000$  which extends support to our Hypothesis H1. In contrast, the statistics of one-way ANOVA indicate that the percentage of likes and comments on the videos do not statistically differ from each other. It can be argued that as fewer and less number of viewers like and comment on the videos the difference becomes insignificant.

We also compared the percentage of likes (likes percentage of views) for the three video categories. As shown in Fig. 3 we could not find clear evidence that ChatGPT videos get more likes than others. However, the trend lines indicate that the percentage of likes for the top and 10th

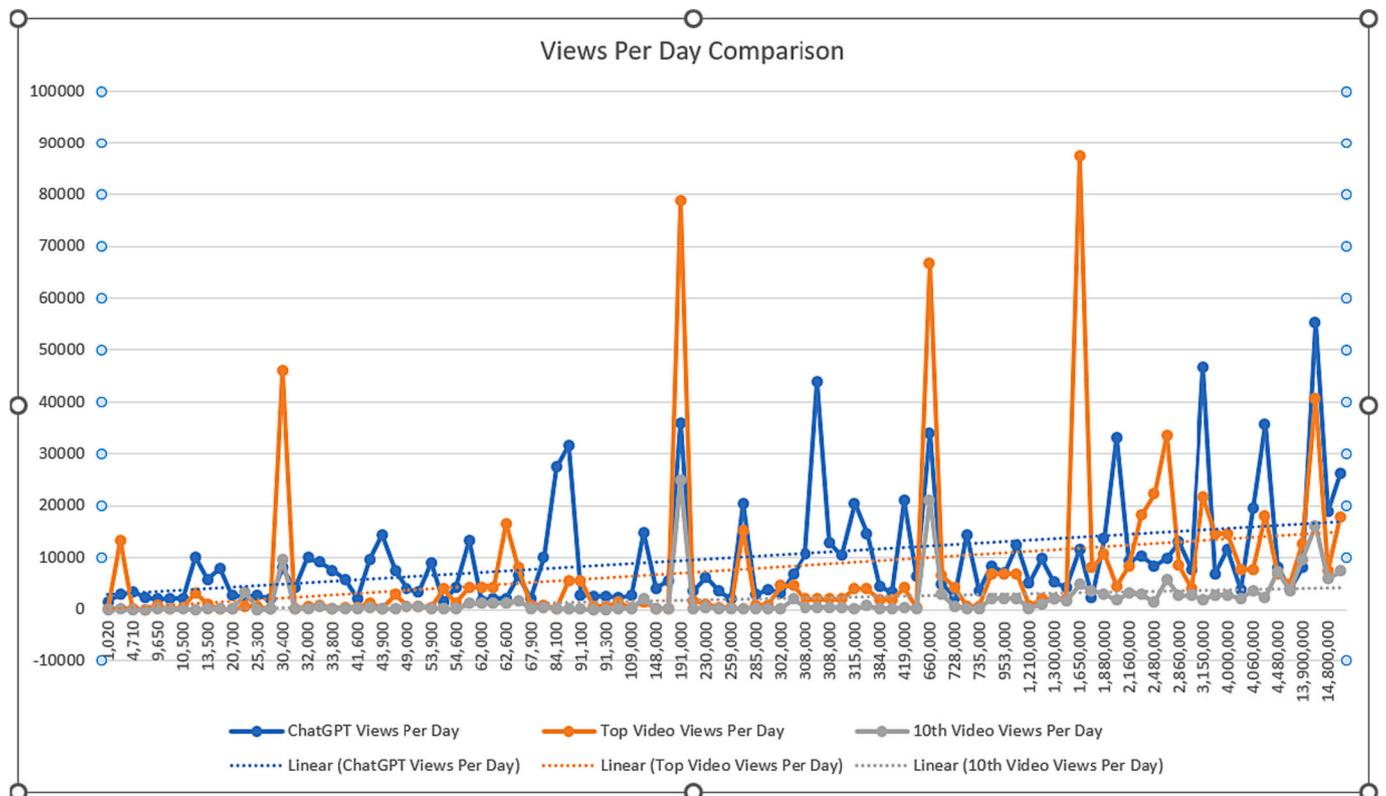
**Table 4**  
Statistics of One-way ANOVA.

Grouping variable	N	Views per day	Likes percentage	Comments percentage
ChatGPT Videos	100	9984.44	2.808	0.227
Top Ranked Videos	100	7569.95	2.695	0.259
Videos at 10th Place	100	1949.486	3.021	0.381
F-Statistics		14.665	0.928	1.665
p-value		0.000	0.396	0.191

place videos has a downward trend whereas the percentage of likes for ChatGPT videos remain stable which partially addresses hypothesis H1. Surprisingly, this trend engenders an interesting finding that as the number of subscribers increases the percentage of likes go down. It implies that less and less number of viewers like the video. The plausible reason for this downward trend is viewers' emotional attachment with content creators as the viewers who are emotionally attached or really like a content creator watch the content as soon as it is published on the internet. However, as the content gets more views the percentage of such emotionally attached viewers decreases which minimizes the percentage of likes. According to Khan (2017) liking a video is a form of active user engagement whereas viewing a video is passive engagement. The users may be reluctant to participate in active engagement as compared to passive engagement.

The comparison of comments also reveals the similar results as of likes. As shown in Fig. 4, the number of comments has a downward trend for the top and 10th place video but it remains stable for ChatGPT.

We also analyzed the total number of views for ChatGPT videos with respect to subscribers. We proposed that content about ChatGPT is less sensitive to the number of subscribers (H2). In other words, we were interested in understanding the connection between the number of subscribers and the success of a video. We refer to this as "subscriber



**Fig. 2.** Comparison of views per day.

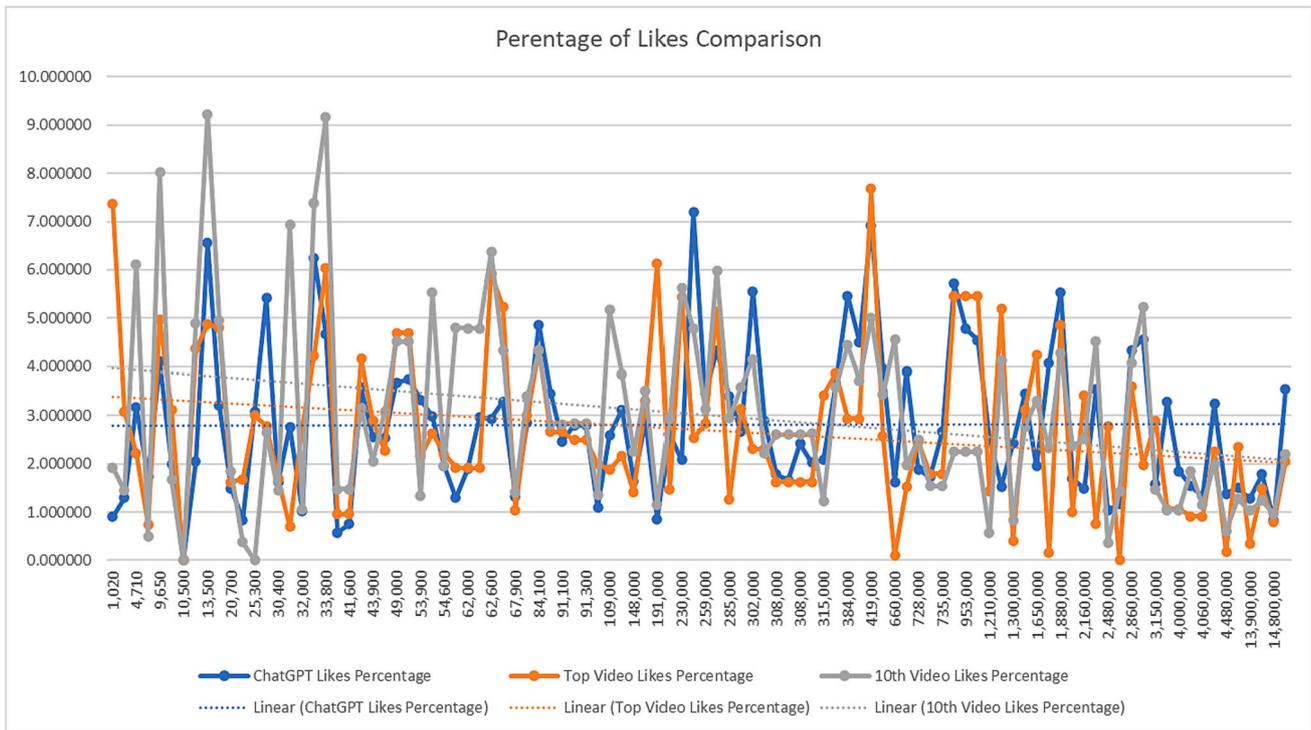


Fig. 3. Comparison of percentage of likes (percentage of views).

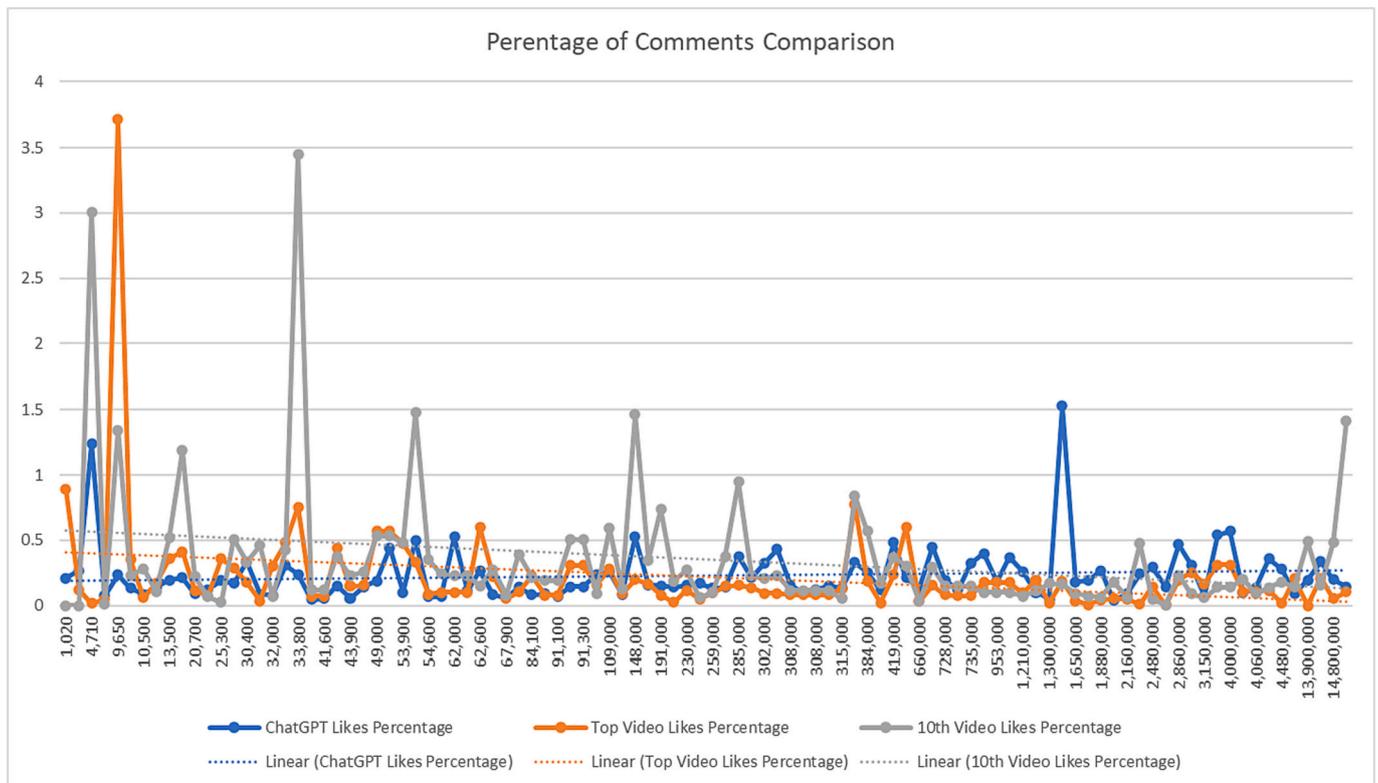


Fig. 4. Comparison of percentage of comments (percentage of views).

sensitivity,” and analyzed it with multigroup SEM and mapping data on the line graph. The multigroup SEM model fits well with the data as the values of CFI = 0.982, TLI = 0.945 and SRMR = 0.061 meet the cut off criterion (Hair et al., 2010). The findings as shown in Table 5 reveal that videos concerning ChatGPT have a tendency to do well regardless of the

number of subscribers that the channel has. Table 5 documents the findings of multigroup SEM where we simultaneously analyzed three types of videos for the impact of the number of subscribers on the views each type of video received. The results clearly show that channel subscribers have the least impact on ChatGPT-related content ( $\beta = 0.164, p$

**Table 5**  
Statistics of multigroup structural equation modeling.

Content type	Hypothesized path	$\beta$	S.E	T-Statistics
ChatGPT	Subscribers → Views	0.164***	0.042	3.963
	Views → New subscribers in last 30 days	0.544*	0.250	2.172
Top Video	Subscribers → Views	0.867***	0.056	15.40
	Views → New subscribers in last 30 days	0.255*	0.107	2.380
Video at 10th place	Subscribers → Views	0.945***	0.043	21.75
	Views → New subscribers in last 30 days	0.259*	0.121	2.141

< 0.05) which supports our hypothesis H2. The results further indicate that a number of subscribers greatly impacts other content views i.e., top video ( $\beta = 0.867, p < 0.05$ ) and 10th place video ( $\beta = 0.945, p < 0.05$ ).

To validate these findings, we mapped the data of number of subscribers and views on a line graph. Fig. 5 corroborates the results of multigroup SEM as the figure indicates that ChatGPT-related content is less sensitive to the number of subscribers. Even at some places channels with fewer than 100,000 subscribers attracted more views than channels with more than a million subscribers. The trend line indicates that the number of views gradually increases with the increase in number of subscribers, but the line remains flat as compared to the trend lines of top video (see Fig. 6) and video at the 10th place (see Fig. 7) These findings support our hypothesis H2. This is a very interesting finding, which may be due to the allure of AI and the general interest in it. The popularity of ChatGPT videos may also be a result of viewers’ interest in understanding the use of the latest technology for their tasks as well as to learn new skills.

It is evident from Figs. 6 and 7 that the number of views increases with the increase of the number of subscribers. The trend lines are steeper which reveals a strong relationship between the number of subscribers and views of the video. However, this trend becomes less apparent for videos related to ChatGPT.

In addition to examining user engagement and the influence of subscriber sensitivity, it is important to investigate how ChatGPT-related content affects subscriber growth. The statistics of multigroup

SEM shown in Table 5 reveal that ChatGPT-related content has the strongest impact ( $\beta = 0.544, p < 0.05$ ) on new subscribers gained by the YouTube channel as compared to other contents i.e., top video ( $\beta = 0.255, p < 0.05$ ) and 10th place video ( $\beta = 0.259, p < 0.05$ ) which supports our hypothesis H3.

The data mapped on the line graphs also corroborates the findings of multigroup SEM. The following graphs shown in Figs. 8 and 9 indicate the increase in subscribers over the last 30 days with respect to ChatGPT-related video views and Top video views. In the following graph (Fig. 8) blue represents ChatGPT-related video views, and orange bars represent the number of subscribers received by the channel in the last 30 days. It is quite evident that the subscriber growth directly relates to the views of ChatGPT videos. In contrast, the 2nd graph (Fig. 9) indicates the relationship between Top video views with subscribers’ growth. The graph clearly shows that the orange bars do not depend on the number of views. Therefore, it can be inferred that content about ChatGPT brings more subscribers to the channel than any other content which supports our hypothesis H3.

**5. Discussion**

The current research elucidates the dynamics of user engagement with YouTube content centered on ChatGPT and compares these findings to engagement metrics for other content disseminated by the same channels. Utilizing the Uses and Gratifications (U&G) theoretical framework (Windahl, 1981) as a guiding lens, we discovered that material centered on ChatGPT drew more user engagement compared to other forms of content produced by the same providers. This observation aligns with the current body of research, which confirms that content that has a trendy or innovative nature, tends to attract a higher level of engagement (Anand et al., 2022; Leonhardt, 2015). The appeal of new and original material acts as a significant engine for audience involvement on platforms like YouTube, according to complementary research that further substantiates this idea (Hoştut, 2010).

Our research reveals an interesting finding that ChatGPT-related content is less sensitive to the number of channel subscribers which challenges the extant literature. The existing literature largely claims that the number of channel subscribers directly affects the number of

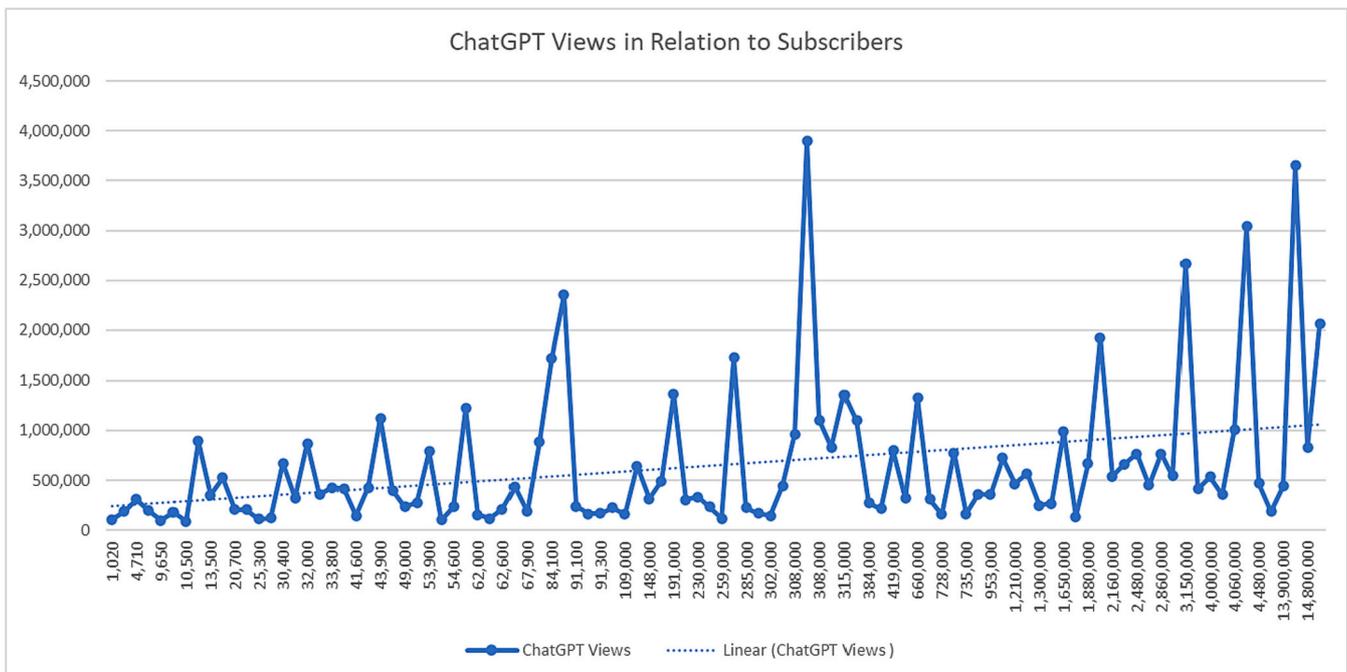


Fig. 5. ChatGPT-related video views with respect to channel subscribers.

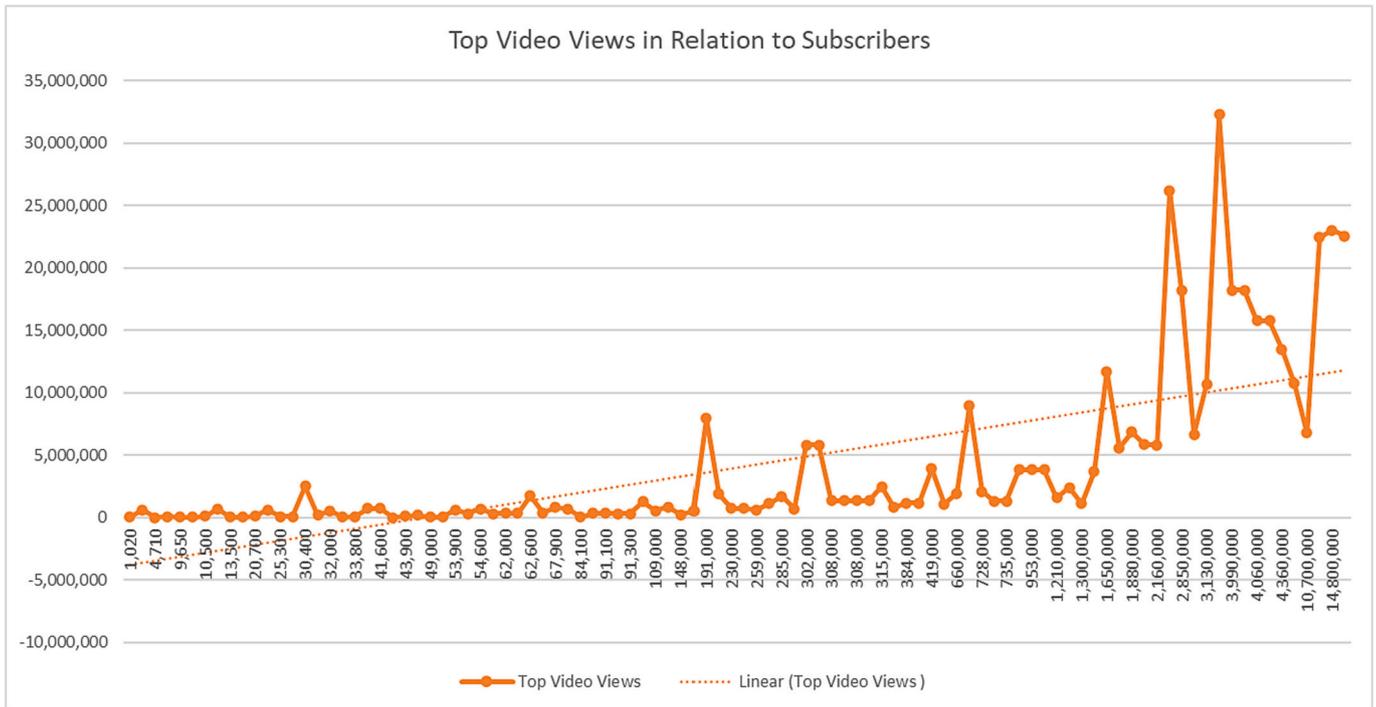


Fig. 6. Top video views with respect to channel subscribers.

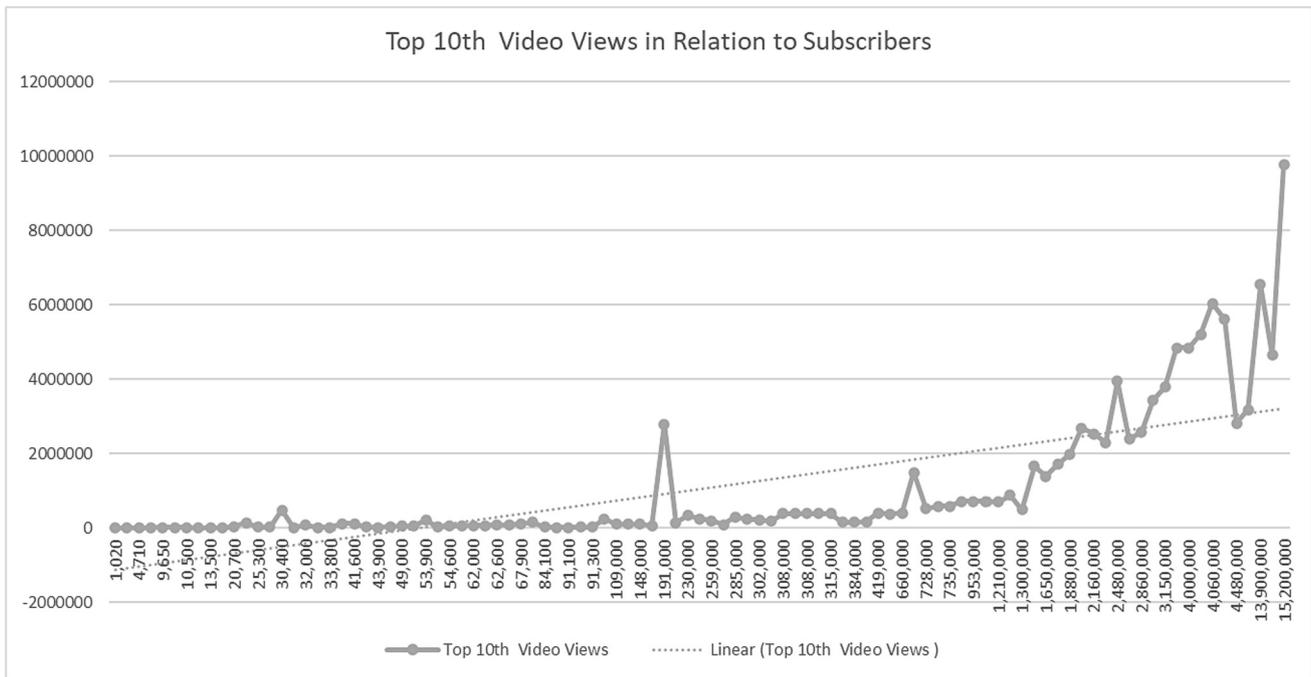


Fig. 7. Tenth place video views with respect to channel subscribers.

video views (Anand et al., 2022; Berger et al., 2019; Hoiles et al., 2017). We also find a similar trend for the other content published on the same channel while the content about ChatGPT attracted more viewers even for channels having fewer subscribers. Similarly, our study proves that ChatGPT-related content helped the channels in gaining new subscribers. This finding is very unique as the extant literature does not provide sufficient evidence on what kind of content brings new subscribers to a YouTube channel. The current research also highlights that viewers commonly employ concise and straightforward keywords when

searching for content on YouTube. They are more inclined to engage with content related to topics such as “how to use ChatGPT,” “how to make money” and “how to accomplish (a task)” Finally, our research revealed that an overwhelming majority of the content about ChatGPT (92%) is created by males and around two-third of the content (76%) originates from only three countries i.e., the United States of America, Australia, and the United Kingdom.

Several seminal contributions to the existing corpus of knowledge are made by the current research. Firstly, it fills a gap in the existing

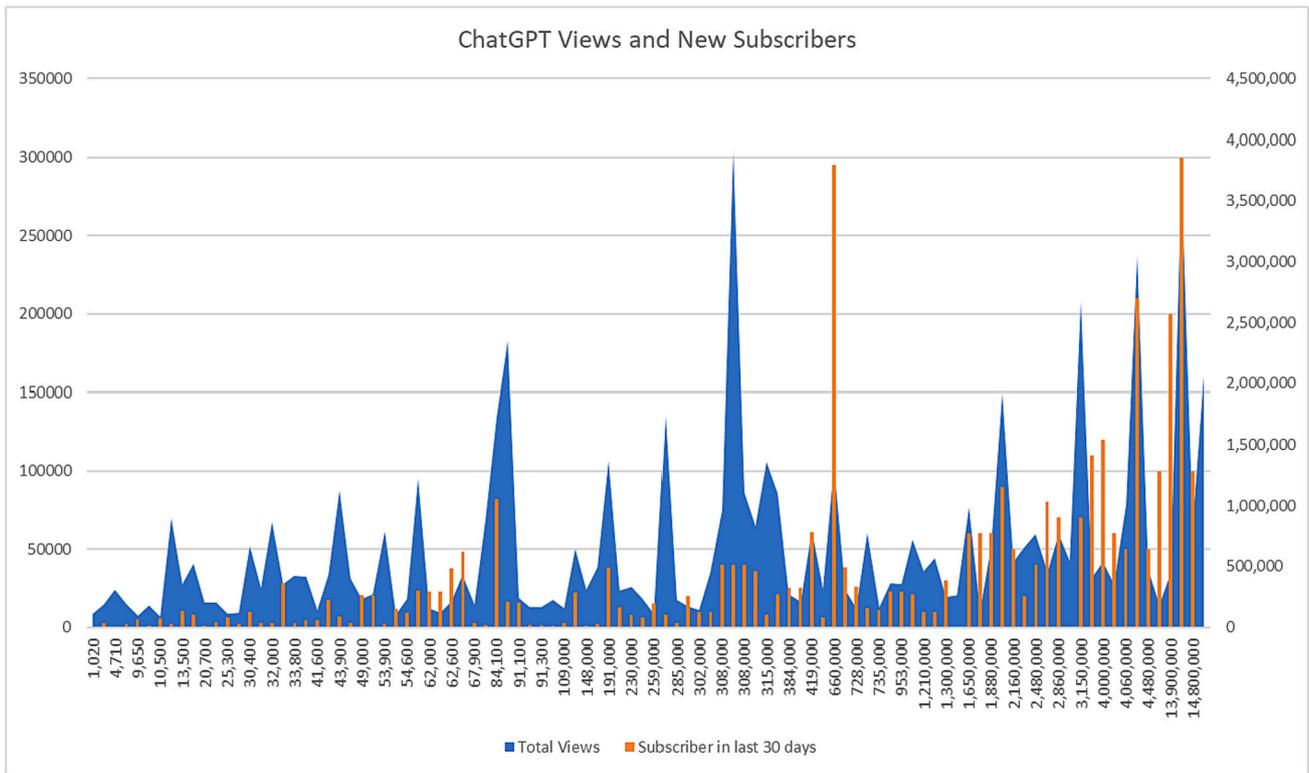


Fig. 8. ChatGPT-related video views and number of new subscribers gained by the channel.

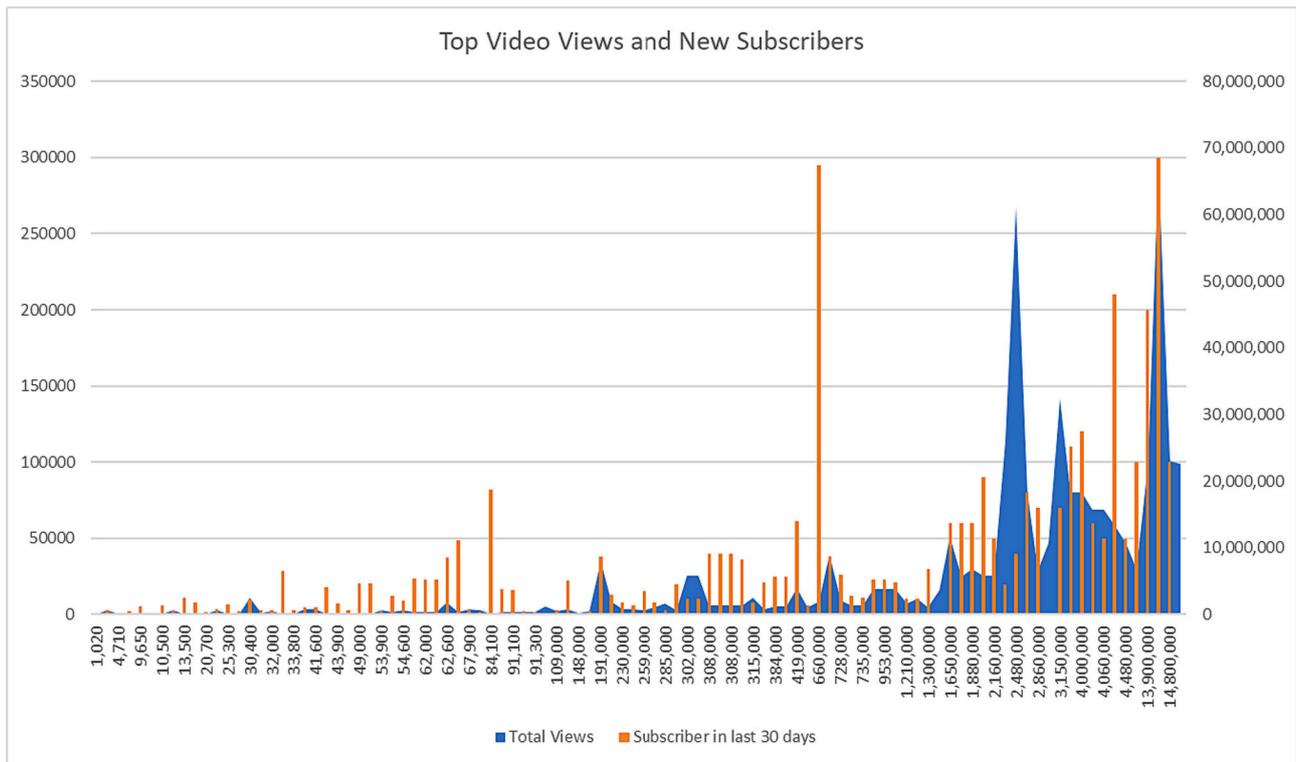


Fig. 9. Top video views and number of new subscribers gained by the channel.

literature that has mostly highlighted ChatGPT’s usefulness for content production but has largely overlooked its performance metrics on social media platforms. This gap has been caused by the fact that previous research has primarily focused on ChatGPT’s utility for content creation

but has largely disregarded its performance metrics or its attractiveness within social discourse on social media platforms such as YouTube. Secondly, this study is distinctive in its investigation of the correlation between the diversity of material on YouTube and the number of

subscribers a channel garners. Thirdly, it is the first study to investigate the effectiveness of YouTube content in acquiring new subscribers. These contributions together enhance the scholarly comprehension of the mechanics of content interaction on YouTube.

Our findings also highlight the importance of novelty in drawing in viewers and encouraging engagement on social media. For example, the content pertaining to ChatGPT received significant engagement as a result of its new and original characteristics. This is consistent with the theoretical framework of Uses and Gratifications, which suggests that individuals are motivated to consume and participate in social media for various factors including entertainment and information seeking (Rubin, 2002), as well as their attraction to novel and innovative material (Hoşut, 2010).

In the current competitive digital landscape, the strategic emphasis on creativity and distinctiveness holds paramount importance. These characteristics function as significant factors that can effectively attract and maintain user engagement, therefore becoming crucial components in a successful social media strategy.

### 5.1. Practical implications

The present study offers several implications for the content creators and AI tool developers. First, our study finds that the content about ChatGPT is less sensitive to the number of channel subscribers as channels with very limited subscribers received more views and new subscribers as compared to channels with a relatively bigger user base. As a consequence of this, we suggest that content producers should calibrate their emphasis according to the growth objectives of their channel, whether those goals are short-term or long-term. Instead of focusing on the immediate size of their subscriber base, those who are trying to achieve sustainable and long-term growth should put more emphasis on the provision of content that is of high quality, is relevant, and is unique. Our research demonstrates that viewers are primarily concerned with the content's relevance and quality in relation to their specific inquiries, rather than the channel's current status or subscriber count. Moreover, content that explains emergent technologies or offers how-to guidelines for novel tools not only generates immediate viewer interest but also serves as a catalyst for attracting new subscribers. Therefore, regardless of a channel's present size, a commitment to producing material of high quality and relevance is likely to result in both instant engagement and a long-term increase in the number of subscribers.

The research findings presented in our study provide valuable insights that go beyond the existing body of knowledge on content creators. These insights give practical guidance for those who are hoping to start their own YouTube channels or are in the early stages of channel development. The aforementioned findings offer a significant prospect for up-and-coming content producers to establish a specialized market segment and cultivate a more resilient and involved audience. By prioritizing the advancement and distribution of material that delves into nascent technologies, techniques, and proficiencies, aspiring producers have the potential to not only attract instant audience attention but also cultivate enduring involvement. This method functions as a strategic tool for differentiation, enabling developing channels to acquire a competitive advantage in a market that is already saturated. The prioritization of quality and relevance in the development of content has the potential to serve as a driving force for both the initial expansion and long-term commitment of viewers.

Our study further reveals that content about ChatGPT attracts more views and engagement. However, more and more content creators are publishing content about ChatGPT which may saturate the content on YouTube and adversely affect the number of views. Therefore, the content creators may use social media APIs like VidIQ, Tubebuddy, and SocialBlade to track what viewers are searching for on YouTube and then create relevant content. In doing so, content creators may have more chances to attract viewers to their videos. These APIs can assist

content creators by providing data on the most frequently searched keywords and the top-performing content associated with those keywords. Armed with this information, creators can identify existing gaps in the content landscape and strategically position their own content in relation to competitors.

While uploading any new content on YouTube the content creators should optimize the content for the keywords/search terms viewers are searching for as it will give them more chances to appear against the search term and will enhance their rankings. Moreover, based on our findings we recommend that content creators should avoid using longer keywords and focus on using simple and short keywords that are more relevant and precise in line with the search terms used by the users.

Our study also found that viewers search for "how to content" therefore, content creators may focus more on the content that guides viewers in using the tools to solve their problems, learning new skills, and making money. Content creators may focus on specific skills and jobs that can be accomplished through AI tools. The creators of assistive artificial intelligence (AI) technologies have the ability to provide instructional video material that offers guidance to users in effectively employing these tools for a wide range of activities. Content of this nature has a better likelihood of garnering increased viewership and interaction due to the inherent trust and credibility connected with the developers involved. Newcomers in the field of tool creation may deliberately enhance their visibility and traction by carefully positioning their instructional films within YouTube's "suggested" section, among content pertaining to established products.

Finally, our study revealed a surprising finding that 92% of the content about ChatGPT is created by male creators. The observed discrepancy indicates that female content developers may either generate an inadequate amount of material in this particular field or struggle to effectively optimize their content for pertinent keywords. The existing disparity in gender representation within the realm of content creation presents a promising avenue for future scholarly investigations. Therefore, we suggest that female content creators may also focus on creating content related to new tools and encourage them to actively publish content whenever some new tools are introduced in the market. They may proactively follow the latest developments in the emerging technologies sector and create content at the earliest to take early mover advantage. The use of optimization tactics, such as the deliberate selection and utilization of keywords, can effectively augment the prominence and discoverability of one's content. It is essential to acknowledge that YouTube, as the greatest platform for sharing videos globally, provides a fair and impartial environment for all those engaged in content creation. The platform offers exceptional prospects for accessing a worldwide audience, regardless of gender. Hence, it may be argued that women creators possess a substantial and underutilized capacity to make valuable contributions to and get advantages from the vast digital landscape.

## 6. Limitations of the study and future research

The present study also has some limitations. Though our research investigates the trendy topic and tries to offer initial insights it cannot encapsulate all the nuances of content creation and consumption related to assistive AI tools. Our analysis provided insights exclusively on ChatGPT-related content and did not involve the analysis of videos related to other assistive AI tools. Potential future research initiatives may expand the boundaries of our present study by investigating the production and consumption of material pertaining to diverse and emerging assistive technologies and tools. Although our analysis is focused on YouTube, it is important to acknowledge that other social media sites, like Twitter, TikTok, LinkedIn, and Instagram, also function as repositories for pertinent material. Therefore, future research endeavors may gain advantages by adopting a multi-platform methodology, wherein data is collected and scrutinized from various supplementary platforms in order to provide a more holistic

comprehension of the topic at hand. The inclusion of a broader range of perspectives and subject matter will not only enhance the current body of scholarly work but also provide a more nuanced understanding of the processes involved in producing and consuming material within various digital environments.

The present study searched content on YouTube with English keywords and extracted data about the videos that rank on these keywords. However, there are hundreds of other languages, and there may exist a huge amount of content published in different languages. Future research may incorporate content published in other languages and may also present a comparison. For instance, Chinese, Spanish, French, Arabic, Hindi, Urdu, and Portuguese are some of the widely spoken languages, and a comparison of the content published in these languages may offer deeper insights. The present study investigates the engagement with ChatGPT-related content and does not take into account the use of ChatGPT in helping content creators to create the content. Future research may examine the utilization of ChatGPT in content creation and how content creators are adopting it to design and disseminate content across different platforms. The present study finds that male content creators have produced 92% of ChatGPT-related content while female content creators did not create much content. The present study did not compare the differences in users' engagement with the content produced by male and female creators due to the small number of video content published by female creators. The future research may purposefully collect data produced by female creators and compare their user engagement with male content creators.

ChatGPT was introduced in late November 2022, marking the onset of the technology hype. The months of February and March 2023 witnessed the peak of this technological buzz, during which our current research gathered ChatGPT-related content on YouTube. Future research may consider comparing different phases of technology hype by collecting and aggregating data in the beginning of technology hype, the highest position of technology hype, and the decline of the technology hype. Furthermore, the present study did not collect data about the promoted/advertised ChatGPT-related video content. Future research may gather the data related to advertised videos on YouTube and compare it with the content which appears organically on certain keywords.

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**Khalid Hussain:** Conceptualization, Data curation, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **M. Laeeq Khan:** Conceptualization, Validation, Visualization, Writing – original draft, Writing – review & editing. **Aqdas Malik:** Conceptualization, Investigation, Validation, Visualization, Writing – original draft, Writing – review & editing.

### Declaration of Competing Interest

We do not have any conflict to disclose.

### Data availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

### Acknowledgment

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