



RESEARCH ARTICLE

Digital and Social Interaction: A Systematic Literature Review of TikTok's Appeal via Uses and Gratifications Theory

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Needs and satisfaction have always been important for researchers in understanding human behavior, motivation and happiness. When a person's needs are met, he will feel satisfied. People usually use social media to achieve this need. If it is not met, people will have negative emotions such as depression and anxiety. Researchers strive to adjust people's emotions through theory to satisfy users. The most widely used is Uses and Gratifications Theory (UGT). This study adopts a systematic literature review method and uses Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to analyze existing literature. This paper selects Science Direct and Scopus databases, with a time limit of 2015 to 2024, and selects 36 papers according to the screening criteria. This paper analyzes the origin and development of Uses and Gratifications Theory and analyzes why this theory is suitable for studying user needs and satisfaction. This paper takes undergraduates as the analysis object and TikTok as the research media and summarizes the primary needs as information needs, social needs, personal integration, social integration, entertainment needs, and convenience motivation. Entertainment needs are the most important needs of undergraduates, while information needs are the least important needs of undergraduates. The short and sophisticated video content and personalized algorithm push in TikTok are the main reasons for users' addiction. The adolescent group that has used social media for a long time is an important direction for future research groups. This paper can also help social media technicians to improve the functions of the media continuously, strive to meet the different needs of users, and then increase the number of users and expand the scale of the enterprise. At the same time, this paper also provides certain conclusions and effective data for future research on UGT and the expansion of the theoretical framework.

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INTRODUCTION

Needs and satisfaction have always been important for researchers in understanding human behavior, motivation, and happiness. When a person's needs are met, he will feel satisfied. In today's era, when people have obtained material needs suitable for survival, they will be more eager to get psychological needs. These psychological needs mainly include social needs, realizing personal values and desires, respect and gaining a sense of belonging, entertainment needs, and satisfying curiosity (Akter et al., 2024). People usually meet this need through social media. When people's needs are not met, they will have negative emotions of depression and anxiety. This will cause problems for people's mental health and even cause social conflicts. Among social media users, adolescent' undergraduates are the main audience (Vaterlaus & Winter, 2021). They use many popular social media, such as Facebook, Instagram, Twitter, TikTok, WeChat, and Kuai Shou. Among them, TikTok is very popular among undergraduates.

To better study user satisfaction, researchers have adopted many theories to conduct research, including Uses and Gratifications Theory (UGT), Expectation-Confirmation Theory (ECT), Social Exchange Theory, Self-Determination Theory (SDT), Expectancy-Value Theory, and Cognitive Dissonance Theory (Jarman et al., 2021). Among these theories, according to the literature review, the theory that academics most frequently utilize is the Uses and Gratifications Theory (UGT).

Researchers' study on Uses and Gratifications Theory (UGT) generally includes four categories (Ibáñez-Sánchez et al., 2022; Ruggiero, 2000). First, the development of UGT. Second, researchers analyze the use and selection of media. Third, researchers divide users into different groups according to social attributes for analysis. Fourth, researchers analyze users' needs and satisfaction. However, few researchers use a longitudinal time perspective to analyze a particular stage. Researchers have analyzed the social media that users choose to use. For example: Facebook, Instagram, twitter, TikTok, WeChat, Kuai Shou. However, few researchers have systematically analyzed TikTok, a short video software that is very popular worldwide. According to the literature, researchers divide and analyze users according to social attributes such as age, gender, type of work, and salary level. However, few researchers have analyzed the youth group, especially the undergraduate group, which is still in the learning stage. Researchers have summarized many user needs, including 6 and 9 categories (Weiyang, 2015) and even 11 and 22 (Al-Jabri et al., 2015). Although researchers have analyzed many user needs, there is no unified standard.

Uses and Gratifications Theory (UGT) shifts the focus from social media to users, analyzing user choices and the satisfaction generated by social media (Ruggiero, 2000). UGT originated in 1970. Although the theory is over 50 years old, it is still the primary theory for researchers to analyze user needs and satisfaction. UGT can analyze why users choose different social media based on their needs and satisfaction. In this article, a systematic summary and induction of the development of UGT can help future researchers better analyze user needs and satisfaction. Taking the very popular TikTok as the research media and undergraduate students in adolescence as the research subjects, the behavioral patterns of ordinary people in popular social media can be analyzed. Based on the above research gap, the researchers proposed 6 research questions for summary and analysis.

RQ1: What is the publication trend of Uses and Gratifications theory papers between 2015 and 2024?

RQ2: What is the origin and development of the Uses and Gratifications theory?

RQ3: What are the characteristics of the popular TikTok?

RQ4: What developments and contributions does the Uses and Gratifications theory have in the analysis of undergraduates?

RQ5: What are the needs that affect undergraduates' satisfaction?

RQ6: What innovations exist in the analysis of undergraduates' satisfaction?

The first and second questions mainly answer the publication trends and development of the Uses and Gratifications theory. The literature screened in this paper is limited to 2015 to 2024. The third question is used to explain the characteristics of TikTok. This can understand the reasons for the popularity of TikTok and extend the successful experience to other social media. The fourth question answers the conclusions and contributions of researchers in the study of undergraduates. The fifth and sixth questions analyze the satisfaction of undergraduates with TikTok. In this process, the user needs of undergraduates are analyzed, and the innovations of UGT analysis are summarized.

Based on this, this study can understand the critical needs of undergraduates using TikTok while analyzing the development of UGT. This can help social media companies improve the design and functions of the software, better meet user needs, and improve satisfaction. From the perspective of the enterprise, improving user engagement and loyalty can increase user stickiness, revenue, and enterprise scale.

METHOD

Regarding research methods, the researchers used a systematic literature review (SLR) to screen papers. This article follows the process of screening literature of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to ensure that this article's research questions and

references are of research value. PRISMA can help researchers identify and evaluate specific topics and issues, provide a clear classification method, and ensure that conclusions are more rigorous (O'Dea et al., 2021). This article selected the Science Direct and Scopus databases to retrieve valid literature and then used Endnote to screen and collect literature. The researchers used Adobe Illustrator software to draw the PRISMA flowchart. The researchers also used Excel to obtain the publication trends of the literature analyzed by researchers using UGT. Finally, the screened literature was analyzed in detail to summarize accurate and clear conclusions.

Databases

In this study, the researchers chose Science Direct and Scopus databases as channels for literature retrieval. Science Direct Databases are full-text scientific databases that provide many academic articles, books, and publications. Science Direct Databases covers a wide range of research disciplines, with more than 16 million pieces of content for researchers. Most of the content is peer-reviewed, which can ensure the high quality and credibility of academic information. Direct Databases have advanced search and filtering tools, which can help researchers find literature quickly and improve research efficiency. Scopus Databases is a comprehensive multi-science database. It also includes research content in various fields. Scopus Databases covers a broader range of disciplines, with more than 86 million pieces of content, making it one of the most comprehensive databases. Scopus Databases has a friendly interface and advanced search and visualization tools. This can help researchers analyze publishing trends and identify emerging research areas. Not only that, the literature included in the database has also been peer-reviewed, and the journal content is also of high quality. Therefore, using the Science Direct and Scopus databases in this article is appropriate.

Research strategy

In this paper, the researcher selected Science Direct and Scopus databases and performed a Boolean operator. In the process of literature screening, the screening condition was ("Uses and Gratifications Theory" OR "UGT") as the Title. The time range of literature publication was controlled in 2015-2024 for the literature search. The publication trend chart of literature with UGT as the theme was analyzed.

Then, according to the research question, the researchers searched in the Science Direct database with Title ("Uses and Gratifications Theory" OR "UGT"), AND Keywords ("User needs") OR ("Satisfaction") OR ("undergraduate students") OR ("TikTok"). With the same Title, AND Keywords ("User needs") AND ("Satisfaction") OR ("undergraduate students") OR ("TikTok"), they searched in the Scopus database.

Include criteria and exclude criteria

To ensure that the literature searched was consistent with the research questions, the researchers developed Include Criteria and Exclude Criteria in Table 1.

Table 1: Include criteria and exclude criteria

Number	Index	Include criteria	Exclude criteria
1	Theory	Related to the Uses and Gratifications Theory	Irrelevant to the Uses and Gratifications Theory
2	Research field	Research conducted using Uses and Gratifications Theory	Research not conducted using Uses and Gratifications Theory
3	Main research topics	Preserve the popular research topic conducted using Uses and Gratifications Theory, TikTok and undergraduate students.	Exclude the popular research topic conducted using Uses and Gratifications Theory, TikTok and undergraduate students.
4	Languages	English	Non-English
5	Years	2015-2024	Exclude less than 2015 and more than 2024

6	Types	Review articles, Research articles, Academic journals	Books, conference, Encyclopedia, reports, newspapers, etc.
7	Number of occurrences	One time	Repetition
8	Pages	More than 10 pages	Less than 10 pages
9	Research design	The research design includes clear research questions, objectives, methods, data collection procedures, and conclusions.	The research design did not include clear research questions, objectives, methods, data collection procedures, and conclusions.

The researcher selected English journals published from 2015 to 2024. First, English is a universal language and is widely used in academia. High-quality and high-impact journals are usually in English. Choosing English is more accessible for obtaining journals with research value and influence. Second, the literature selected by the researchers should be related to the Uses and Gratifications Theory. Third, the chosen keywords should be associated with User needs, Satisfaction, undergraduate students, and TikTok. Fourth, the researchers only analyzed articles and journals and deleted duplicate literature in the two databases. Fifth, the researchers deleted papers with less than 10 pages. Papers with high depth and connotation need to be supported by a lot of content. For example, a detailed literature review, detailed verification of the rigor and credibility of the article, and meticulous discussion and inspiration. The presentation of these contents requires a lot of text. The researchers chose papers with more than 10 pages, which are more representative. Sixth, the research design of the selected articles should include straightforward research questions, objectives, methods, data collection procedures, and conclusions. Based on this, the researchers can ensure that the screened papers meet the research requirements.

Screen procedure

The researcher screened the literature and showed the screening process in Figure 1.

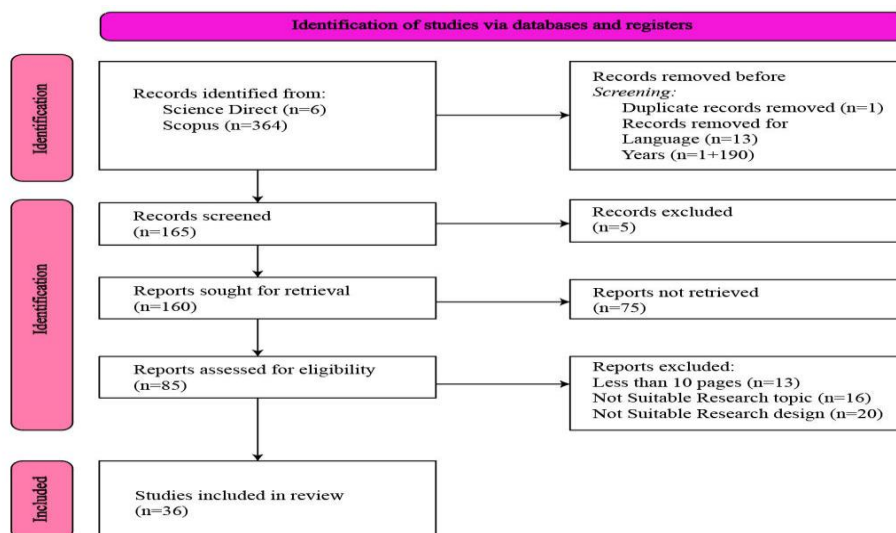


Figure 1: PRISMA flow diagram for the systematic review

First, based on the title and keywords, this paper obtained 370 documents in the Science Direct and Scopus databases. Second, with the help of Endnote's database tools and screening criteria, this paper deleted 205 documents. Third, in the record screened, 5 documents that did not match the topic and keywords of this paper were deleted. Fourth, in the report sought for retrieval, 75 documents that were not articles and journals were deleted. Fifth, based on the number of pages of research topic and research design, 49 inappropriate documents were deleted. Finally, the 36 papers obtained were analyzed and summarized in detail.

Data analysis

While analyzing the literature review, the researcher used Endnote and Excel software. After obtaining 36 suitable kinds of literature, the researcher read the content of each piece of literature in detail. This includes questions, objectives, methods, data collection procedures, and conclusions. First, the researcher analyzed the publication trend chart of UGT in two databases based on the literature data from 2015 to 2024 and concluded. Second, analyze the current development of UGT. Third, analyze the popularity characteristics of TikTok based on the literature. Fourth, find the contributions and conclusions of the Uses and Gratifications theory in the analysis of undergraduates. Fifth, summarize the needs that affect undergraduates' satisfaction and the innovative findings in this process based on the literature review. Appendix A lists all the numbers, authors, years, and titles under review.

RESULT

Literature publication trends in 2015-2024

From 2015 to 2024, researchers used the Uses and Gratifications Theory (UGT) in the Science Direct database to analyze 6912 papers (Science Direct website, 2024.10). In the Scopus database, there are 3029 papers related to UGT (Scopus website, 2024.10). The researchers used the year as the horizontal axis and the number as the vertical axis to show the publication of papers in the past ten years through a bar chart. See Figure 2 and Figure 3.

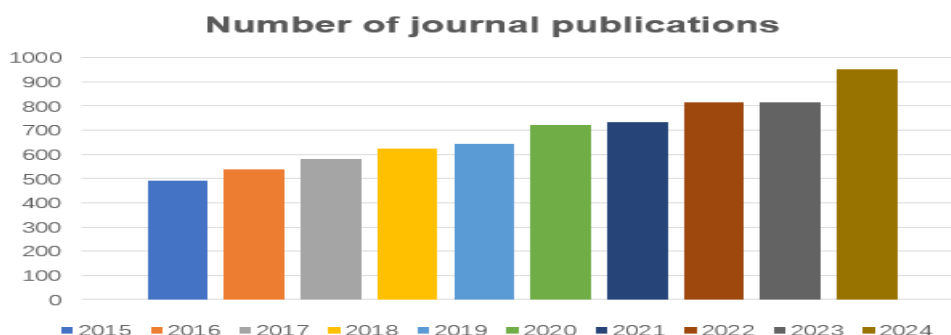


Figure 2: Research timeline (science direct database)

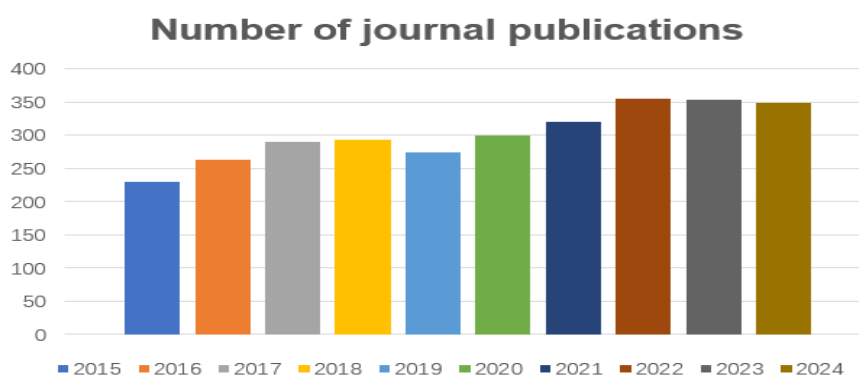


Figure 3: Research timeline (scopus database)

From these two figures, we can see that although the number of papers published by researchers based on UGT has decreased in some years, overall, the number of papers on UGT in these two databases has increased yearly. In Figure 2, the number of research papers on UGT by researchers shows an increasing trend yearly. In 2020, more than 700 papers were published, and the trend has been increasing. This may be because of the emergence of the COVID-19 pandemic, and residents worldwide have reduced their travel and activities and spent more time using social media. Researchers' research directions have begun to tilt toward users of social media. In 2024, the number of papers published is at its highest point. In the future, research on UGT may continue to increase. In Figure 3., There is not much change in the attention of researchers to UGT, and the number of

papers published has mostly stayed the same. In 2019, the number of papers had a clear downward trend. This may be because researchers have turned to other theories and models. In 2020, due to the pandemic, researchers began to study user needs and increased the number of papers published. In summary, it can be seen from these two figures that although UGT is an old theory, due to its maturity and applicability, researchers will still use it to continue their research on users and media.

Uses and gratifications theory (UGT)

Uses and gratifications theory (UGT) origin

Uses and Gratifications Theory (UGT) originated in the 1940s. In the initial research, researchers applied it to mass communication, mainly studying users' use of radio, television, and movies (Katz et al., 1973). It was not until 1970 that Katz established the theory. The focus of researchers shifted from the impact of media on people to people's use of media, emphasizing the subjective will of users. UGT primarily studies how consumers look for particular media to fulfill their demands and satisfy their desires. (Ruggiero, 2000).

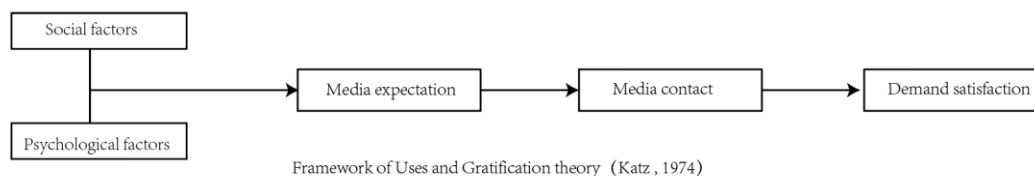


Figure 4: UGT theory origin

Researchers assume that users are active and that the social media they frequently use are their deliberate choices (Brand et al., 2024). Users have different needs, and social media is a tool for users to meet their needs and get satisfaction. In the process of using the same social media, users have different needs. Using UGT, researchers can analyze why certain social media are viral. This can also provide specific insights for content creators and social media developers to design media that better meets user needs and increases the number of users and creative income.

Uses and gratifications theory (UGT) development

In the development of UGT, researchers have discovered many user needs. These include cognitive needs to seek information and knowledge, emotional needs, identity needs to realize self-worth, social needs to interact with people, and entertainment needs to escape reality and relax (Falgoust et al., 2022; Palos-Sanchez et al., 2021). According to the development of the times, researchers have shifted from analyzing different media to meeting different user needs, and the same media can meet different user needs. For example, traditional media meets users' information needs; social media meets users' entertainment and social needs. However, the new short video media TikTok can now meet users' information, entertainment, and social needs (Vaterlaus & Winter, 2021). Researchers have found many essential conclusions from the origin and formal proposal of UGT theory to date.

First, users have shifted from a passive to an active perspective (Boudkouss & Djelassi, 2021). In early studies, researchers centered on the media and ignored the subjective role of users. This shift helps to determine the critical role of people. Based on this, researchers can analyze users' preferences and needs to analyze why users actively choose and use media. Researchers can better understand user behavior and screen and summarize different user needs. This also extends to a rich research direction. For example, researchers pay more attention to personal background and cultural differences (Sheldon et al., 2021). They analyzed the impact of users' personal experience, age, gender, and cultural differences on users' choice of social media. Cultural differences in the United States, Germany, China, and France cause users to use social media based on different needs. This allows researchers to explore better the impact of users' situations and external environments and helps social media practitioners optimize and upgrade software.

Secondly, the content of demand motivation is enriched. Based on the original foundation, researchers have discovered many needs of users. For example, they seek entertainment, learn new information, build social relationships, gain status, escape reality, and engage in self-display and self-expression (Ifinedo, 2016). Some researchers summarize undergraduates' needs as purpose value,

social enhancement, entertainment value, self-discovery, and maintaining interpersonal relationships (Chiang, 2013).

Thirdly, the same media can give users different satisfaction. After analyzing many emerging media, researchers found that these media are trying their best to cater to the different needs of users, allowing them to obtain multiple satisfactions and increase user stickiness. For example: Facebook, Instagram, twitter, TikTok, WeChat, Kuai Shou. Especially for the popular TikTok, users have generated many positive expectations. Users continue to receive positive satisfaction feedback, and using TikTok has become a part of users' daily lives. The needs related to identity recognition and self-realization summarized by researchers are the content users pay special attention to (Lin & Chu, 2021). Users plan their profiles and share content on social media, striving to project their ideal image to other users. This satisfaction is usually obtained through other users' likes, comments, and reposts of their content (Pelletier et al., 2020).

Finally, researchers suggest that social media practitioners improve content and marketing strategies. In the media, where users are the main body, Buf and Ștefăniță (2020) suggest that practitioners start a variety of content creation reward programs. For example, users are encouraged to create more targeted and personalized content. Users can be given cash rewards based on the number of likes, comments, and reposts. This can reduce the pressure on social media practitioners to create content. Practitioners can also target advertisements based on user needs and motivations. On the other hand, researchers used UGT to analyze the media use by users from different cultural backgrounds. Deng et al. (2023) found that collectivist cultures use social media more to maintain social stability, while individualistic heroic cultures use social media to express themselves. This can help media practitioners change their marketing plans, let users experience different cultures, and expand the user base.

TikTok popularity characteristics

The researcher analyzed and summarized the selected literature and obtained the TikTok Popularity characteristics. TikTok is a music-based short video social software founded by Beijing-based ByteDance. This software allows users to create, find, and share short videos for 15 to 60 seconds (Li et al., 2021). TikTok is very popular around the world, especially among young people.

Fast and sophisticated short video content stimulates users' dopamine. TikTok's videos are short, and users can use much fragmented time for entertainment and watch content quickly. Each exquisite short video content catches the user's eye in a very short time, and they can watch multiple videos in a short time. Users can quickly browse the content by scrolling up and down on the touch screen, making it easy to immerse themselves in.

Personalized algorithm push and viral spread increase users' time using the software. Karizat et al. (2021) found that when users are watching videos or interacting with others, the background of the software will push personalized content to users through the user's viewing history, likes, and shared content. These pushed content are highly related to the user's preferences. Not only that, software developers encourage users to spread their content to others. They will set up activities and encourage users to participate in online challenges with hashtags in return for bonuses (Bonifazi et al., 2022), forming a viral spread.

TikTok has rich video creative editing tools and a music library. Users can create and share videos on various themes in TikTok. For example, dance, v-log, learning, travel, daily life, music, and education (Herrick et al., 2021). Users can use various editing tools, filters, and effects the platform provides during the creation process. People who have never learned video editing can make beautiful and popular videos. TikTok also includes many music copyrights, and users can easily edit songs into their videos. Many of the videos that have gone viral use recent popular music.

Users can earn money on TikTok. Short videos posted by users can get likes, comments, and shares. The rapidity of this interaction keeps users engaged and immersed. Not only that, when the number of likes, comments, and shares of user videos reaches a specific number, users can get a certain amount of money in return (Buf & Ștefăniță, 2020). Users can also earn income by cooperating with brands to make soft advertising videos.

TikTok can help users interact online in a fast-paced society. Users can create similar videos to interact with other users through links such as tags and challenges, promoting collaboration and community awareness. TikTok can apply for access to users' address books and nearby people. This is more authentic, making it easier for users to connect with creators and content and feel more real and natural social interaction.

In short, TikTok's short videos cater to people's fast-paced lives today, allowing users to express their creativity and participate in interactions through short videos. These popular features of TikTok have made it one of the world's most influential social media platforms.

Innovation and contribution in analytical undergraduates

Researchers have drawn rich, innovative content and contributions from analyzing the undergraduate groups that are very active on TikTok.

Researchers have understood the various motivations of undergraduates to use TikTok. Some researchers have found that undergraduates pay special attention to self-expression, community belonging, and identity formation. Undergraduates use TikTok to show their image, which can better understand the connection between social media and identity building, social interaction, and social recognition (Falgoust et al., 2022). Undergraduates use TikTok mainly to keep up with the trends of the times, social interaction, regulate emotions, and relieve boredom (Bossen & Kottasz, 2020). Not only that, Khasawneh et al. (2020) analyzed the negative impact of TikTok on undergraduates, such as addictive viewing of TikTok, excessive eating, lung damage, and self-harm. Researchers suggest that teachers give undergraduates a correct browsing concept to prevent the occurrence of addictive events.

During the COVID-19 period, it is a crucial node for undergraduates to use TikTok. The emergence of the epidemic has caused many undergraduates to turn to social media for entertainment, social interaction, and education (Moulaei et al., 2021). The most obvious is that undergraduates have increased their time using TikTok. The epidemic lockdown, online learning, and social isolation have changed the daily lives of undergraduates (Alarifi & Husain, 2023). Undergraduates have more free time to use TikTok, and entertainment, social interaction, and stress relief are the main reasons users kill time. TikTok has become an essential medium for undergraduates to adapt to COVID-19 and cope with daily life and study.

TikTok has become one of the channels for undergraduate learning. During the COVID-19 pandemic, undergraduates acquired knowledge and skills by watching short and attractive videos on TikTok (Vaterlaus & Winter, 2021). Educators challenge undergraduates to learn. For example, teachers encourage students to make short videos, and the content of the videos is the knowledge points they usually learn. Teachers encourage students to act as teachers and introduce knowledge to others with short texts and videos. This dramatically stimulates students' enthusiasm. Undergraduates can also learn by participating in tests and making videos. This transforms passive learning into active learning. There are many educators and professionals on TikTok. They share knowledge in various fields, and undergraduates can learn by watching short videos.

TikTok can provide undergraduates with positive feedback and mental health counseling. During the COVID-19 pandemic, the epidemic restricted students' travel. Students received positive feedback by creating videos and receiving likes, comments, and reposts from other users. McCashin and Murphy (2023) found that undergraduates can also seek help from psychological counselors on TikTok to relieve the stress and anxiety caused by isolation and remote learning and provide emotional support and academic advice to undergraduates.

Undergraduates can learn other skills besides textbook knowledge on TikTok. Researchers found that undergraduates can learn common sense, such as cooking and repair; daily hobbies, such as flowers and rock climbing; and computer technology, such as programming and graphic design on TikTok (Zaitun et al., 2021). Also, there are learning communities represented by tags in TikTok (Bonilla-del-Río & Vizcaíno-Verdú, 2023). For example, Learn, Study Table. Undergraduates can quickly find educational content in it, interact with people who are interested in this topic, and learn together. Researchers believe that TikTok's visual and music functions allow undergraduates to blur

the line between entertainment and education. Short videos with humor, pop culture, and fun can arouse their interest and immerse themselves in learning.

Undergraduate students can plan their careers and develop their majors in advance while browsing TikTok. Researchers have found that professional TikTok creators advise developing professional skills (Falgoust et al., 2022). For example, professional skills in literature, communication, and education in the social sciences. These suggestions are constructive for academics who still need to enter society. Not only that, some video producers will also make videos of their own employment experiences to provide advice and guidance to undergraduates.

Personal characteristics of undergraduates affect the use of TikTok. Researchers have found that the personal situation of undergraduates affects their use of social media. For example, introversion and extroversion, social anxiety and self-esteem. Introverted students prefer to find information and comment on other people's videos. Extroverted students prefer interacting with people and posting videos (Chan et al., 2019). Students with social anxiety and self-esteem are more likely to be influenced by comments from others. When other people's comments are negative, they will reduce the time they use TikTok or even stop using it (Halfmann & Rieger, 2019). In response to this situation, researchers suggest that undergraduates should be bolder, muster up courage, not care too much about other people's opinions, and use TikTok positively.

In general, researchers use the Uses and Gratifications Theory to summarize the positive significance of undergraduates using TikTok based on the needs and satisfaction of undergraduates. Through the study of TikTok, researchers understand the impact of emerging media represented by TikTok on undergraduates. This helps to improve the theory in the context of a digital society. Especially in emergencies like COVID-19, researchers can better analyze social media in future studies, understand teenagers' personal characteristics and usage habits, and cultivate them to become pillars of society.

Summary of undergraduate student needs

After a literature analysis, the researchers concluded that undergraduates have six primary needs. They are information needs, social needs, personal Integration, Social Integration, entertainment needs, and convenience motivation.

Information needs refer to people's purposeful pursuit of information and solving related problems in their daily lives. Information seeking prompts people to use social media to obtain news events, knowledge, or content of interest (Olpin et al., 2023; Savolainen, 1995). Some users also use social media to obtain information to solve personal or social problems. TikTok developers and influencers should launch highly professional videos and create content to raise awareness of problems in the medical field (Al-Marouf et al., 2021). Researchers also recommend that undergraduate students remember to obtain information while using TikTok for entertainment.

Social needs refer to people's desire to maintain friendships, gain trust and care, and desire a sense of belonging and become part of a group. Social needs refer to interpersonal communication, emotional needs, and a sense of belonging. Social needs motivate users to participate in social media platforms to satisfy their social relationships and sense of belonging to a group (Gamage et al., 2022). Social needs are the needs that undergraduates want very much.

Personal Integration is mainly related to the user's self, constantly improving oneself, improving oneself, and enhancing confidence. The personal Integration of users is reflected in self-disclosure, self-improvement (Attié & Meyer Waarden, 2022;), and self-expression. Shao et al. (2023) also found in their study that users' motivations include self-expression and self-presentation, which affects undergraduates' satisfaction evaluation of TikTok. Researchers also analyzed the relationship between undergraduates' exposure to videos such as food or body care advertisements on TikTok and their perception of their appearance (Feijo et al., 2023). The results showed a significant positive correlation between the extent to which young students were exposed to food or body care advertisements on TikTok and their satisfaction with their appearance (WHO, 2022). Moreover, if they are dissatisfied with their bodies, they will have negative emotions and depression problems (Murray et al., 2023).

Social Integration refers to the user's expectation of gaining attention and building a reputation on social media. Also, it refers to improving one's social status due to contributions to the online community (Mascheroni et al., 2015). This social integration can satisfy one's reputation and respect from others and meet the user's identity-shaping needs, fame, practice, and recognition needs (Che et al., 2023). Researchers have found that users gain social recognition through social media, such as the likes, comments, and reposts of video content users share (Feijo et al., 2023). In particular, when other users pay attention to themselves and become grassroots stars, they have great social status and satisfaction. In social media, undergraduates mainly make money by rewarding virtual currency (Che et al., 2023).

Entertainment needs can refer to the characteristics of a specific thing that make users feel happy (Vaterlaus et al., 2019). Some researchers have found that the entertainment needs of users are boredom to pass the time. Researchers have also found that users' needs for entertainment in social media include curiosity, enjoyment, fun, and even addiction (Palos-Sanchez et al., 2021). In TikTok, undergraduates mainly use it to relax, enjoy, escape reality, relieve boredom, and get pleasure. Entertainment needs are the most critical needs of undergraduates.

Convenience motivation refers to the fact that users do not find it difficult to use or act, and it is easy for them to achieve their goals. According to the literature review, users' convenience motivation positively influences their satisfaction when using social media, users can complete tasks as quickly as possible and achieve their goals conveniently, efficiently, and effectively (Prabowo & Nugroho, 2019). In TikTok, undergraduates can use the software quickly and flexibly. In particular, TikTok's accessibility, user-friendly interface, content diversity, and convenience facilitated undergraduates' usage experience.

In general, among these needs, undergraduates are eager to obtain entertainment needs. Undergraduates are eager to escape the pressure of study, so entertainment is the top priority, reducing anxiety and killing time. Social needs, personal integration, social integration, and convenience motivation are secondary needs of undergraduates. Information needs are needs that are desired after the previous needs are met. From this, undergraduates are more inclined to engage in entertainment, self-expression, social interaction, social identity, and a sense of belonging. They are interested in something other than obtaining information.

DISCUSSION

Principal findings

Uses and Gratifications Theory (UGT) was established by Katz in 1970. UGT analyzes users' needs satisfied by social media from the audience's perspective and examines social media's psychological and behavioral effects on users. According to Science Direct and Scopus data, the overall trend of papers published on Uses and Gratifications Theory (UGT) in the past 10 years has been rising steadily. Although the UGT theory has a history of 70 years from its origin, its maturity, and practicality still allow many researchers to continue to study it.

In the development of UGT, researchers have summarized the various needs of users. For example, they seek information and knowledge, pursue emotions, realize self-worth, interact socially, and enjoy entertainment. In addition to summarizing the various needs of users, researchers have made other discoveries. First, the research perspective has shifted from social media to the user perspective. Second, with the development of new media technology, users can obtain different needs and satisfaction in the same social media. Third, users in different cultures and backgrounds have different needs. Fourth, researchers encourage social media practitioners to improve marketing strategies. Encouraging creators to make videos by offering rewards for video creation can achieve a win-win situation.

Research field findings

This study summarizes and analyzes the popularity characteristics of TikTok. First, TikTok's fast and detailed short video content stimulates users' dopamine. Second, personalized algorithm push and viral spread increase users' time using the software. Third, TikTok has many creative video editing tools and music libraries. Fourth, users can earn money in TikTok, which stimulates users to continue

using TikTok. Fifth, TikTok can help users interact online in a fast-paced society and meet users' social needs.

Based on the literature review, the researchers also summarized the researchers' contributions to communication with undergraduates as the research subjects. First, the researchers summarized the needs of undergraduates. These mainly include six types: information needs, social needs, personal integration, social integration, entertainment needs, and convenience motivation. Among these needs, undergraduates are eager to obtain entertainment needs. They want to escape the pressure of study and entertainment first, reduce anxiety, and kill time. Information needs are the least important needs of undergraduates among these six needs. Second, during the COVID-19 period, the time and frequency of undergraduates using TikTok increased significantly. Third, TikTok has become a channel for undergraduates to learn. Fourth, TikTok can provide undergraduates with positive feedback and psychological health counseling. Fifth, undergraduates can learn other skills besides textbook knowledge on TikTok. Sixth, undergraduates can make career plans and professional development in advance while browsing TikTok. Seventh, undergraduates' circumstances affect their use of TikTok.

Future direction

Uses and Gratifications Theory (UGT) has been close to maturity after years of development, but researchers believe that users and social media can still be analyzed from different aspects.

Continuously improve and develop UGT. Researchers can integrate UGT with other emerging communication theories to develop a new theoretical framework. For example: Networked Individualism, Algorithmic Media Theory, Third-Person Effect Theory, Polymedia Theory. These theories can be integrated with UGT to find demand variables and mediating and moderating variables that affect user satisfaction.

Researchers can make a detailed comparison between traditional and digital media to analyze media changes. By comparing traditional media represented by radio and television with digital media represented by TikTok, the advantages of digital technology can be summarized in detail. In the future, researchers can continue to study TikTok's unique algorithm push technology and summarize suggestions for improvement on other social media platforms.

Researchers can continue to study the satisfaction of the youth group. The age range of the youth group spans a wide range. Researchers can divide them according to age and educational level, for example, junior high school, high school, junior college students, master's students, and doctoral students. Through detailed age division, researchers can develop reasonable plans for different groups to use social software and create a green online environment. Furthermore, while analyzing user needs and satisfaction, researchers can continue to analyze user differences in culture, population, and geography. Researchers can also use a longitudinal time perspective to analyze the degree of change in user satisfaction over time.

Researchers should increase the analysis of interdisciplinary applications and digital technologies. In the future, researchers can combine social media with environmental ecology, biology, health care, marketing, and even political activities. In terms of digital technology, researchers can analyze artificial intelligence, algorithm push, 3D technology, etc., to provide direction for improvement in other social media.

Researchers can also analyze the negative impact of social software. In the digital age, protecting users' personal privacy is particularly important. Researchers can explore ways and methods to protect user privacy for software makers. Researchers can also analyze people who overuse social media and analyze how their satisfaction with connections or recognition leads to overuse or social media addiction. Focus on the impact of social media on users' mental health.

LIMITATIONS

Some things could be improved in this paper's analysis of UGT. First, this paper uses a systematic literature review to screen papers. Although it can save time, 36 papers may not cover different research fields. In this process, there may be excellent papers, but they are excluded due to keyword mismatches. Second, this study's research on the youth group is limited to undergraduates. The youth

group also includes junior high school students, high school students, junior college students, master's students, and doctoral students. Due to volume limitations, this paper did not study teenagers of other age groups. Third, this study only analyzed the popular TikTok. Many other popular social software, such as Facebook, Instagram, Twitter, TikTok, WeChat, and Kuai Shou. Therefore, in the future, other researchers can study other social media and analyze and compare multiple social media. Discover the advantages of social media and encourage software makers to promote it.

CONCLUSION

This paper aims to systematically review the recent trends in UGT research and analyze the needs and motivations that affect undergraduates' use of TikTok, using undergraduates as the research subjects and TikTok as the research medium. After screening the data using a systematic literature review, the researchers analyzed the publication trends of papers on UGT in recent years and the origin and development of UGT. Among undergraduates, there are six primary needs of users: information needs, social needs, personal integration, social integration, entertainment needs, and convenience motivation. Entertainment needs are the most prevalent needs of undergraduates, while information needs are the least important needs of undergraduates. Using UGT for analysis can pay more attention to users' subjective initiative. Not only that, the researchers also suggest paying attention to users of different cultures and backgrounds and encouraging creators to make videos by rewarding video creation. The researchers also found many popular features of TikTok. Fast and sophisticated short video content, personalized algorithm push, and viral spread are essential reasons for the popularity of TikTok. This paper points out the direction of future research groups for researchers, that is, young people who have used social media for a long time. This paper can help social media technicians to improve the functions of the media continuously, strive to meet the different needs of users, and then increase the number of users and expand the scale of the enterprise. At the same time, this paper also supports the conclusion and provides effective data for future research on UGT and the expansion of the theoretical framework.

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Appendix A: All articles for screening review

No.	Author & Year	Title
1	Alarifi & Husain (2023)	The influence of Internet banking services quality on e-customers' satisfaction of Saudi banks: comparison study before and during COVID-19.
2	Benninger et al., (2022)	Needs and research priorities for young people with spinal cord lesion or spina bifida and their caregivers: a national survey in Switzerland within the PEPSCI collaboration.
3	Chan et al., (2019)	Intrinsic motivation and psychological connectedness to drug abuse and rehabilitation: The perspective of self-determination.
4	Che et al., (2023)	The impacts of gamification designs on consumer purchase: A use and gratification theory perspective.
5	Choi et al., (2016)	Social media marketing: applying the uses and gratifications theory in the hotel industry.
6	Dikmen & Elias-Ozkan (2016)	Housing after disaster: A post occupancy evaluation of a reconstruction project.
7	Falgoust et al., (2022)	Applying the uses and gratifications theory to identify motivational factors behind young adult's participation in viral social media challenges on TikTok.
8	García-Aurrecochea et al., (2022)	Validity of the inventory of perception of personal relationships and bio-psycho-social well-being in young adults in treatment for drug use.
9	Geng & Guo (2022)	App types, user psychological and instrumental needs, and user experience in the sharing economy: An empirical research.
10	Girardi et al., (2021)	User-centered practices in the eyes of informal caregivers of in-patients with severe acquired brain injury: needs, caring experience, and satisfaction.
11	Gkavra et al., (2024)	Determinants of usage and satisfaction with demand responsive transport systems in rural areas.
12	Göloğlu & Zurnacı (2016)	An approach for handling individual customer preferences and emotional needs—Yielding 3D product assembly generation.
13	Halfmann & Rieger (2019)	Permanently on call: The effects of social pressure on smartphone users' self-control, need satisfaction, and well-being.
14	Halvaiee & Akbari (2022)	User quality of experience estimation using social network analysis.
15	Hohm et al., (2022)	User experience in safety-critical domains: a survey on motivational orientations and psychological need satisfaction in acute care.
16	Hsu (2022)	Applying cognitive evaluation theory to analyze the impact of gamification mechanics on user engagement in resource recycling.
17	Huang et al., (2024)	Unpacking the determinants of social media-based lifelong learning from the need hierarchy theory.
18	Huber et al., (2023)	Immersion experiences for biomedical engineering undergraduates: comparing strategies and local partnerships at two institutions.

19	Ibáñez-Sánchez et al., (2022)	Augmented reality filters on social media. Analyzing the drivers of playability based on uses and gratifications theory.
20	Ibenne & Durodolu (2021)	Information needs versus Information services: Assessing predictors of Secondary School Students with Visual Impairment Satisfaction at School Library Media Centres in South-Eastern Nigeria.
21	Ifinedo (2016)	Applying uses and gratifications theory and social influence processes to understand students' pervasive adoption of social networking sites: Perspectives from the Americas.
22	Kamalakannan et al., (2023)	Evaluation of the feasibility and acceptability of ReWin—A digital therapeutic rehabilitation innovation for people with stroke-related disabilities in India.
23	Karimi et al., (2015)	Clinical information systems end user satisfaction: the expectations and needs congruencies effects.
24	Lin (2016)	User communication behavior in mobile communication software.
25	Marchand et al., (2015)	The role of gender in factors associated with addiction treatment satisfaction among long-term opioid users.
26	Mierzecka & Suminas (2018)	Academic library website functions in the context of users' information needs.
27	Montesdioca & Maçada (2015)	Measuring user satisfaction with information security practices.
28	Moulaei et al., (2021)	The development and usability assessment of an mhealth application to encourage self-care in pregnant women against COVID-19.
29	Papachristopoulos et al., (2023)	Desperate Times Call for Desperate Measures: A Comparative Analysis of Services between Traditional and Distance Libraries in COVID-19 Era.
30	Sheldon et al., (2021)	Baby Boomers' use of Facebook and Instagram: uses and gratifications theory and contextual age indicators.
31	Shi et al., (2016)	A survey of evidence users about the information need of acupuncture clinical evidence.
32	Taylor et al., (2019)	Telemedicine for allergy services to rural communities.
33	Taylor (2024)	Users and technology: A closer look at how technology engagement affects users.
34	Torres-Gómez (2023)	The phenomenon of information needs in the context of Web 2.0 in management students in the municipality of Atlixco, Puebla.
35	Torres-Gómez (2024)	Information needs and perception of artificial intelligence tools among doctoral students in educational research in Tlaxcala, Mexico.
36	Tripathi et al., (2024)	Development of "DiabetesSutra" a mobile application for lifestyle management of Type 2 Diabetes in India.