

Impact of TikTok Usage on Higher Education Students: Addiction, Flow State, and Sense of Belonging

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Abstract: This research explores the impact of TikTok usage among higher education students, focusing on three dimensions: addiction, flow state, and sense of belonging. Recognising the significant role that TikTok plays in young people's digital lives, the study aims to analyse how this platform affects students at a Portuguese School of Higher Education according to these dimensions, thus contributing to a deeper understanding of the effects associated with its use. A mixed methodology was adopted, combining quantitative and qualitative methods. A sample of 125 students answered a questionnaire, and structured interviews were conducted with 6 participants. The questionnaire included specific scales to measure the flow state, sense of belonging, and signs of addiction related to TikTok usage. The interviews provided a deeper exploration of individual perceptions of the platform's impact on their lives.

The results reveal that students frequently experience the flow state when using TikTok, reporting that time "flies" and that they become deeply absorbed by the content. Despite this, according to quantitative data collected, most do not consider themselves addicted to the platform. However, during the interviews, students acknowledged that TikTok can be addictive, admitting to spending more time than intended and losing track of time, suggesting a discrepancy between initial self-assessment and more in-depth reflection. Regarding the sense of belonging, most students do not feel part of the TikTok community, which may be attributed to their predominantly passive use of the platform and lack of interaction or content creation. This indicates that building a sense of belonging is linked to more active and interactive participation patterns.

It is concluded that TikTok has a significant impact on higher education students, inducing flow states and potentially contributing to addictive behaviours. The absence of a sense of belonging suggests that passive usage does not foster a sense of community, which may affect how students relate to the platform and other users. These results have important implications for understanding the impact of social media on young people's well-being and mental health, highlighting the need to promote balanced and mindful usage. Future studies may focus on designing strategies aimed at mitigating potential negative effects deriving from the addictive use of this sort of technology and explore the role of content creation as a way of fostering a sense of belonging.

Keywords: TikTok, Social Media, Higher Education Students, Flow State, Sense of Belonging

1. Introduction

TikTok quickly became a platform with a strong social and behavioural impact on young people (Montag et al., 2021). The personalisation of content and the dynamic format of short videos favour the flow state, an experience of total immersion characterised by the loss of the notion of time and intense concentration (Csikszentmihalyi, 2014; Araújo & Karhawi, 2023). Widely recognised for its positive impact, such as promoting creativity and disseminating educational content, the adverse effects of excessive TikTok use cannot be ignored (Qin et al., 2022). Recent studies indicate that the continuous consumption of short videos can negatively affect attention span and academic performance, particularly among college-aged young people. Additionally, the pressure to participate in viral challenges and create relevant content can intensify feelings of anxiety and social comparison, harming users' mental health.

Among young people aged 18 to 24 in Portugal, TikTok has established itself as part of the digital routine, registering significant growth in recent years (Gustavo et al., 2023). However, the platform's engaging design increases the potential for addiction by exploiting positive reinforcement mechanisms that prolong use and dependence (Trigo, 2021). In addition, viral challenges promote a sense of belonging but can also generate exclusion among those who do not achieve social validation, shaping users' digital and emotional experiences (Figueiredo, 2022). This scenario highlights the importance of understanding the psychological and social factors that make TikTok attractive to young people, as well as the impacts of this attractiveness on overall well-being.

In this context, the main objectives of this study are to verify the presence of the flow state and the feeling of belonging during the use of the platform and to assess students' perceptions of TikTok addiction.

Through a mixed methodological approach, it is intended to understand how TikTok influences young higher education students' digital habits and experiences, contributing to a reflection on the conscious use of social networks. By investigating the relationship between the state of flow, the sense of belonging and the perception of addiction on the platform, this study contributes to a broader debate on the role of social networks in forming digital identity and promoting healthy online behaviour.

2. Theoretical Framework

Social media has become an integral part of young people's lives, especially among higher education students, and it often leads to excessive use of these platforms. Constant access to mobile devices and permanent connectivity allows users to connect to social networks continuously, significantly influencing their habits and behaviours (Hashim et al., 2016; Desai, 2017).

In this scenario, the impacts of using social networks can be both positive and negative. On the one hand, they facilitate communication and maintain interpersonal relationships, promote access to information and educational content, and contribute to developing digital skills (Couto, 2015; Morais et al., 2011). On the other hand, the excessive use of these platforms has been associated with negative effects, such as a decrease in face-to-face interactions and an influence on personal and social perceptions (Coelho et al., 2020). Additionally, constant exposure to idealised content and social comparison can affect how users perceive their lives (Dias & Duarte, 2021). The need to gain approval through "likes", comments and shares can lead to greater dependence on social media, influencing young people's self-perception and self-worth (Omar & Subramanian, 2013). In the specific context of TikTok, these dynamics can be intensified due to the platform's format, which favours visual and interactive content, promoting viral trends that encourage the active participation of users (Dias & Duarte, 2021; Zulli & Zulli, 2020). In addition, users' individual characteristics, such as personality, motivations, and personal needs, also play a crucial role in how they interact with social media and its impact on their lives (Figueiredo, 2022; Trigo, 2021).

In 1990, Csikszentmihalyi introduced the concept of flow state, which refers to total immersion in an activity characterised by intense concentration, deep involvement, and a sense of intrinsic pleasure (Csikszentmihalyi et al., 2014; Vianna et al., 2018). During the flow, the individual loses track of time and is completely absorbed in the task, experiencing a balance between the challenges presented and their personal abilities.

On social media, particularly on TikTok, the flow state can be easily achieved due to the design of the platforms and the way content is presented (Trigo, 2021). Specifically, TikTok uses advanced algorithms to customise the content feed according to user preferences, providing a seamless and engaging experience that maintains attention for long periods (Araújo & Karhawi, 2023). Previous studies suggest that flow on digital platforms is associated with increased usage time and continuous user engagement (Brailovskaia & Teichert, 2020). Thus, in the context of TikTok, the flow state can contribute to the excessive use of the platform, as users become immersed in watching short videos that appeal to their interests and emotions (Omar & Dequan, 2020).

At the same time, belonging is a fundamental human need that influences social development, especially among young people, in building their identity (Santos, 2022). McMillan's and Chavis' theories of community stress elements include influence, integration, satisfaction of needs, and shared emotional connection.

Social networks, therefore, play a significant role in promoting this feeling by facilitating online communities where users can interact, share experiences, and connect with others who share similar interests (Caneira, 2016; Dias & Duarte, 2021). On TikTok, features such as viral challenges, hashtags, and the ability to follow and interact with content creators allow users to feel part of a global community (Zulli & Zulli, 2020). However, the role of social media in promoting or inhibiting a sense of belonging may vary. While some users find support and recognition in online communities, others may feel excluded or belittled, especially if they achieve a different level of engagement or recognition than other members (Figueiredo, 2022).

Social media may also trigger addiction patterns, which are defined as patterns of behaviour characterised by excessive and compulsive use of these platforms, which interferes with daily activities and causes harm in personal, academic or professional life (Omar & Subramanian, 2013; Trigo, 2021). Users who develop this type of addiction may have difficulties controlling or reducing screen time, prioritising the use of social networks over other responsibilities. Several factors contribute to the development of social media addiction, including individual characteristics, such as personality and self-esteem; personal motivations, such as the need for

belonging and recognition; and the characteristics of the platforms themselves, which use reward mechanisms to keep users engaged (Rubin, 2008; Shao, 2009). In the specific case of TikTok, studies point to a high potential for addiction due to the design of the platform, the format of the content (Trigo, 2021) and the mechanisms social media uses to keep users close at hand. Things like notifications regarding irrelevant content tend to pop up when users are offline to lure them back into the circle. The endless scrolling of short videos, the personalisation of the feed, and the constant introduction of new visual and auditory stimuli can lead users to spend long periods on the platform without realising the time passing (Bossen & Kottasz, 2020; Omar & Dequan, 2020).

Thus, the considerations presented highlight the complexity of interactions between young people and social networks, particularly TikTok. Understanding the factors that influence addiction, flow state, and the sense of belonging is essential to developing strategies that promote a balanced and conscious use of these platforms, enhancing the benefits and minimising the negative effects associated with excessive use.

3. Methodology

The present study, which focused on using TikTok among higher education students, employed a mixed-methods methodology to explore the phenomena of addiction, flow state, and sense of belonging. Integrating quantitative and qualitative approaches allowed for a comprehensive analysis, combining statistical data with individual experiences, which increased the validity and understanding of the results (Creswell, 2007). The sample consisted of 125 higher education students who participated voluntarily. The majority were female (80%, n=100), followed by males (16.8%, n=21), with 3.2% preferring not to indicate their gender. The ages of the participants were concentrated between 20 and 25 years old, with 32.8% (n=41) between 23 and 25 years old and 31.2% (n=39) between 20 and 22 years old. In academic terms, 78.4% (n=98) were undergraduate students, and 20.8% (n=26) were master's students from different courses, ensuring the diversity of the sample.

An online questionnaire adapted from Trigo (2021), made available via Google Forms, was used to collect quantitative data. This instrument assessed the levels of addiction, flow state and sense of belonging associated with using TikTok. The questionnaire was accessible for three days (October 27 to 29, 2023) and disseminated to higher education students from the same institution through social networks. In addition, structured interviews were conducted with six students selected at their convenience. Of the interviewees, four were female, two were male, aged between 20 and 27 years; four were pursuing a bachelor's degree at the time, and two had a master's degree. The interviews explored the participants' personal experiences with TikTok, focusing on the themes of addiction, flow state and sense of belonging.

The quantitative data analysis used descriptive statistics, identifying patterns and trends in the phenomena studied. The qualitative analysis of the interviews was based on content analysis, highlighting recurring themes that enriched the understanding of the quantitative results (Silva et al., 2006). All ethical procedures were complied with. Participation was voluntary, with informed consent, ensuring the anonymity and confidentiality of the information provided. The data collected were used exclusively for the purposes of this study following the applicable ethical and legal principles. The mixed-methods approach provided a comprehensive view of TikTok usage among college students. This methodology allowed us to quantify the phenomena under study and understand the nuances and individual experiences, contributing to a deeper and more meaningful analysis (Cantanhede, 2023; Creswell, 2007).

4. Results

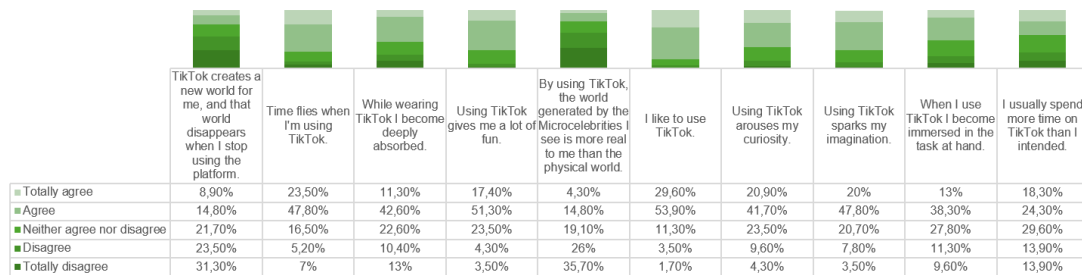
4.1 State of Flow

One of the objectives of this study was to understand whether students at a Higher School of Education in Portugal enter a state of flow when using TikTok. The data collected indicate that many students experience this state of immersion while using the platform, and according to the questionnaire results (Graph 1), 96 students (83.5%) agreed or totally agreed that they like to use TikTok. In addition, 82 students (71.3% agreed or totally agreed) felt that time flies when using TikTok, indicating an altered perception of time, characteristic of the flow state. Regarding the fun provided by the platform, 79 students (68.7% agreed or totally agreed) said that TikTok provides them with much fun. As for stimulating creativity, 78 students indicated that TikTok sparks their imagination (67.8% agreed or totally agreed), and 72 students (62.6%) agreed or totally agreed that it arouses their curiosity. Regarding deep immersion, 62 students felt deeply absorbed while using TikTok (53.9% agreed or totally agreed), and 59 students reported being immersed in the task while using the platform (51.3% agreed

or totally agreed). Additionally, 49 students admitted that they usually spend more time on TikTok than they intended, highlighting the difficulty in stopping its use due to their flow state (42.6% agreed or totally agreed).

On the other hand, most students disagreed with certain statements: 71 students (61.7%) disagreed or totally disagreed that when using TikTok, the world generated by microcelebrities is more real to them than the physical world. In addition, 63 students (54.8%) disagreed or totally disagreed that TikTok creates a new world and that the world disappears when using the platform. These results suggest that, despite immersion, students maintain a clear distinction between TikTok's physical and virtual realities.

Table 1: State of flow in the use of the TikTok platform



The interviews conducted with the six students reinforce this data. Most respondents acknowledged that they often lose track of time when using TikTok. Some stated that they sometimes lose track of time altogether while using the platform. In contrast, others indicated that this occurs sporadically or only in specific situations, such as scrolling through the video feed. One of the students pointed out that the feeling of wasting time is almost inevitable due to the way the platform presents the content and engages the user. At the same time, another admitted that he gets involved even though he is aware of his time on TikTok. Most respondents admitted, therefore, that when using TikTok, they occasionally lose track of time, which is indicative of the experience of the flow state. This sense of deep immersion and intense concentration is enhanced by the immersive nature of the platform and its algorithms, which feature personalised content and a continuous stream of short videos tailored to the user's preferences.

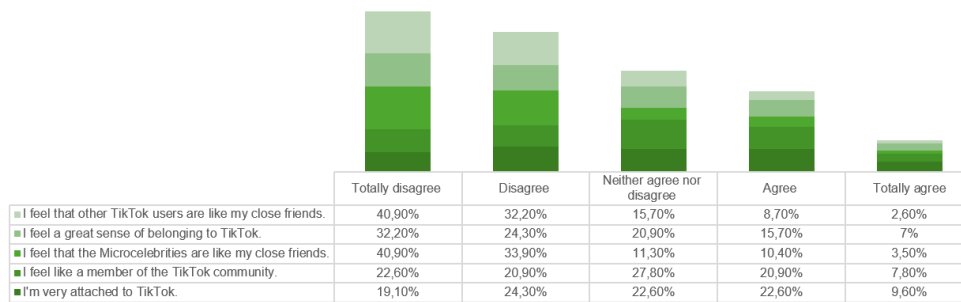
In short, both quantitative data and qualitative evidence point to the presence of the flow state among higher education students while using TikTok. Most participants report typical sensations of this state, such as the loss of the notion of time and immersion in the activity, which may explain the prolonged and frequent use of the platform among this audience.

4.2 Sense of Belonging to the TikTok Community

Within the scope of this research, we sought to understand if there is a sense of belonging among students in the TikTok community. The data obtained through the questionnaire reveal a tendency of disagreement regarding the existence of this feeling for most participants.

Analysing the levels of agreement with the statements related to the feeling of belonging (Graph 2), it was found that 84 students (73.1%) showed a discordant opinion about "I feel that other TikTok users are like their close friends". In addition, 86 students (74.8%) disagreed or totally disagreed that they "feel that micro-celebrities are like their close friends". Regarding the statement "they feel a great sense of belonging with TikTok", 65 students (56.5%) expressed disagreement. Regarding being "very attached to TikTok" and "feeling like a member of the TikTok community", 50 students (43.5%) disagreed or totally disagreed with both statements.

Table 1: Sense of belonging with the TikTok platform



On the other hand, considering the students who agreed with the statements, 37 (32.2%) said they were "very attached to TikTok" and 33 (28.7%) said they "feel like members of the TikTok community". These percentages indicate that, although a significant portion of students do not feel they belong to the TikTok community, a considerable group demonstrates some attachment and identification with the platform. The analysis of the reasons for the absence of a sense of belonging was deepened through the interviews. When asked, "Do you feel like you belong to the TikTok community? Why?" the answers were revealing. Student 1 does not feel he belongs, justifying that he only consumes content and does not share it, spending little time on the platform. Student 2 also does not consider himself to belong to the community, stating that he could live perfectly without the platform and its contents. Student 4 does not feel belonging, using TikTok only to occupy their free time, with no intention of sharing or interacting deeply.

On the other hand, Student 5 feels he belongs to the community, as he shares common interests with other users and actively interacts. Student 6 recognises belonging to the community by posting videos and participating more actively. Most respondents who do not feel they belong to the community associate their opinion with their passive use of the platform, limiting themselves to content consumption without active involvement or content creation. Users who consider themselves part of the community actively participate, sharing videos and interacting with other users.

Despite the divergence in the sense of belonging, all students agree that TikTok is an easy platform to interact with other users. In the answers to the question "Do you consider TikTok to be an easy social network to interact with other users? ", the ease of interaction through features such as comments, likes, and shares stands out; the intuitive interface that allows you to respond or react to other videos easily; and the possibility of reaching a relevant number of views and interactions without the need for prior connections. These observations suggest that, although the platform facilitates interaction, the sense of belonging is more associated with users' level of involvement and active participation.

4.3 Perception of Addictive traits on TikTok

The perception of addiction and addictive traits in the use of TikTok was assessed through quantitative and qualitative data, allowing a contrast between the student's self-assessments and the reflections obtained in the interviews. In the questionnaire, most students indicated that they did not feel addicted to the platform: 84 students (75.7%) stated that they did not feel addicted to using TikTok (Figure 1).

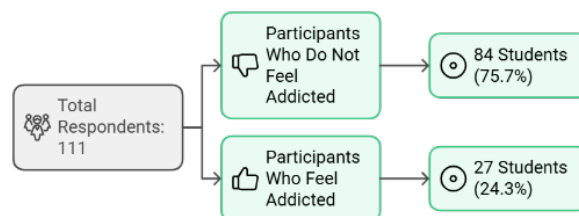


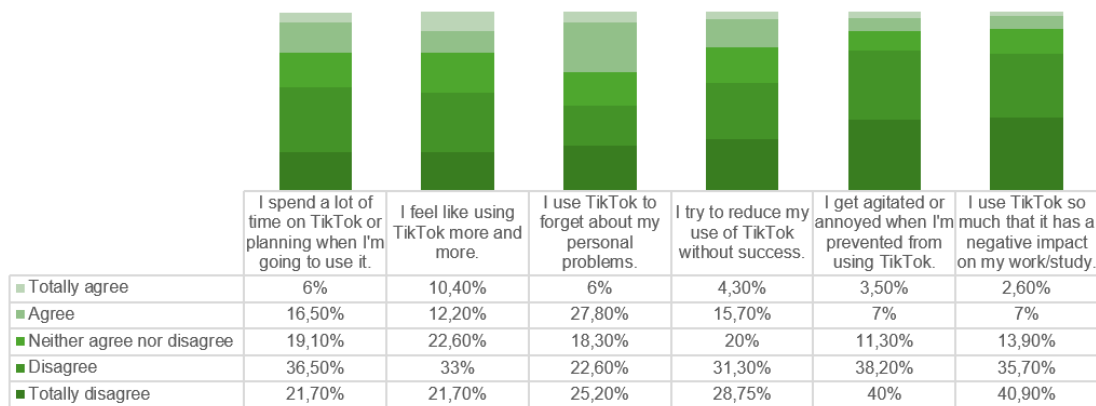
Figure 1: Perception of addiction to TikTok

Analysing the responses to statements related to signs of addiction, it is observed that most students disagreed or totally disagreed with the following statements (Graph 3): "I get agitated or bothered when I am prevented from using TikTok" (90 students, 78%); "I use TikTok so much that it has a negative impact on my work/study" (88 students, 76.6%); "I spend much time on this platform or planning when I will use it again" (67 students, 58.2%); "I try to reduce my use without success" (69 students, 60.1%); "I feel like using it more and more" (63 students, 54.7%); "I use TikTok to forget about my personal problems" (55 students, 47.8%). However, 39

students (33.8%) agreed with the statement, "I use TikTok to forget about my personal problems", indicating that, for a significant portion, the platform serves as an escape mechanism.

Contrary to the data in the questionnaire, the interviews revealed a different perception. When asked about the potential addiction caused by TikTok, the answers were more assertive. Student 1 recognises that TikTok can create a habit that becomes an addiction due to the diversity of content and ease of access. Student 2, although he does not consider himself addicted, admits that for the younger layer, the platform may have become an addiction. Student 3 claims that TikTok is addictive as the content is based on personal interests. Student 4 considers social media an addiction, acknowledging that he spends more than half his time on his phone on these platforms. Student 5 believes that TikTok can contribute to the creation of addiction, just like other social networks. Student 6 admits that TikTok can become addictive, acknowledging that he spends an "absurd" number of hours on the platform.

Table 2: Signs of addiction on the TikTok platform



This discrepancy between self-assessment of addiction in the questionnaire and recognition in interviews suggests that, although students do not consciously identify themselves as addicted, they recognise the addictive behaviours associated with TikTok use. Possible reasons for this discrepancy include underestimation of overuse, normalisation of behaviour, and cognitive dissonance. Discussing these divergences is fundamental to understanding students' perceptions of TikTok addiction. While the quantitative data point to a denial of addiction, the interviews reveal a recognition of the risks and associated behaviours. This contrast highlights the need to sensitise students to the potential impacts of excessive use of social networks and to promote more balanced use strategies.

5. Discussion

The results obtained in this study provide an in-depth understanding of the use of TikTok among higher education students, specifically concerning flow status, sense of belonging and perception of addiction. Analysing these results in the light of the theoretical framework allows us to discuss the implications and better understand the dynamics associated with using this platform.

The data reveals that many students experience the flow state while using TikTok. Most participants reported sensations typical of this state, such as losing the sense of time and a deep immersion in the activity. This data corroborates Csikszentmihalyi's theories about flow, indicating that TikTok's custom design and algorithms facilitate entry into this state (Vianna et al., 2018; Trigo, 2021).

The ease with which users enter a flow state on TikTok can be attributed to how the platform presents content tailored to individual interests, maintaining a continuous and engaging flow (Araújo & Karhawi, 2023). This phenomenon may explain the prolonged use of the app, as users remain immersed without realising the elapsed time. These results align with previous studies that link flow state to increased usage time and continuous engagement on digital platforms (Brailovskaia & Teichert, 2020; Omar & Dequan, 2020).

Despite the ease of interaction provided by TikTok, most students do not feel a strong sense of belonging to the platform's community. Many users identify themselves as passive consumers, limiting themselves to viewing content without actively participating through deeper sharing or interactions. This behaviour can influence the sense of belonging since active participation and community involvement are key elements for developing this

feeling (McMillan & Chavis, 1986; Santos, 2022). Students who consider themselves part of the TikTok community are the ones who interact most actively, creating and sharing content and establishing connections with other users. This suggests that the sense of belonging is closely linked to the level of participation and involvement in the platform, aligning with theories that highlight the importance of integration and shared emotional connection for the development of a sense of community (Caneira, 2016; Dias & Duarte, 2021).

A notable discrepancy emerged between quantitative and qualitative data about the perception of addiction. While most students do not consider themselves addicted to TikTok in the answers to the questionnaire, the interviews revealed a recognition of the addictive behaviours associated with the use of the platform. Several factors can explain this divergence. First, the normalisation of intensive social media use among young people may lead to an underestimation of addictive behaviours. Spending several hours on social media is often perceived as a common and socially accepted behaviour, making recognising potential problems difficult (Omar & Subramanian, 2013; Trigo, 2021). Second, cognitive dissonance can play a significant role. Students can avoid recognising themselves as addicts so as not to confront the discomfort associated with awareness of potentially harmful behaviour (Festinger, 1957). In addition, the lack of tangible physical symptoms, such as those associated with other types of addiction, can contribute to the denial of social media addiction.

These results highlight the need to raise awareness about the signs of social media addiction and its potential impacts on students' academic and personal lives. Educational strategies and targeted interventions can be useful to promote a more conscious and balanced use of TikTok and other digital platforms.

6. Conclusions

The present study shows that higher education students often experience the flow state when using TikTok, contributing to prolonged and immersive platform use. However, despite the simple, straightforward interaction, most do not feel a strong sense of belonging to the TikTok community, especially among those who use the platform passively and without engaging through comments, likes or shares.

The discrepancy observed through the data collected with the questionnaires between self-rated addiction and acknowledging addictive behaviours in interviews suggests that students may not be fully aware of the impact of excessive TikTok use. These results reinforce the importance of addressing the issue of social media addiction in the academic context, promoting reflection and education regarding healthy digital habits.

One of the limitations of this study is the size and composition of the sample, which was predominantly female and limited to a specific institution. Future studies should consider larger and more diverse samples to establish some generalisation of the results. In addition, longitudinal investigations could provide insights into the evolution of behaviours and perceptions over time.

It is also recommended that interventions be explored that can help students better manage TikTok use, enhancing positive aspects such as nurturing creative and critical thinking, as well as goal-orientated learning activities while minimising the risks associated with addiction and overuse.

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