A Comprehensive Overview of Telegram Services - A Case Study

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ABSTRACT

Background/Purpose: *Telegram is an internationally available, free, instant messaging service. Over the years, Telegram has established itself as a trailblazer and innovative choice in the domain of instant messaging services. Telegram supports a wide range of devices and is available for iOS, Android, macOS, Windows as well as Linux. Telegram's cross-platform support is one of the reasons why it has achieved over a billion downloads and 500 million monthly active users. This paper investigates the features of the Telegram app, services offered, its corporate background and financial information related to the Telegram as an organization. The authors have also presented a SWOT analysis on Telegram, along with their observations and recommendations for improving Telegram's services.*
Objective: *To examine the features and services of Telegram in depth and look at the aspect that contributed to its success.*
Design/Methodology/Approach: *Undertaking a case study by collecting data from secondary sources and presenting a comprehensive SWOT analysis on the subject of study.*
Findings/Result: *Telegram's ultimate aim, according to research conducted through numerous resources and analysis of facts and figures, is not to earn money, and it provides a plethora of security features that have made it popular in recent years.*
Originality/Value: *A study based on existing literature and online resources to create a comprehensive overview of the subject of study.*
Paper Type: *Case study analysis.*
Keywords: Instant messaging service, SWOT analysis, Telegram, Features, Competitors, Case Study

1. INTRODUCTION :

SMS (Short Messaging Service) was a game-changer for the telecommunication sector in the '90s. The first-ever SMS was sent on December 3, 1992, and thirty years later, it is safe to say that SMS has become an artefact of the past [1]. SMS and e-mails have given way to instant messaging, a way of delivering messages across the internet, with the ease of texting a friend in our contacts list. Telegram is one such instant messaging service, with a particular focus on security and privacy. It is one of the 10 most downloaded apps in the world and has acquired several loyal users, who prefer a free and secure messaging app over its for-profit counterparts.

Telegram is a cloud-based messenger, where users can login from different devices at the same time and their messages will get seamlessly synced with all devices. The Telegram app consumes less than 100 MB of storage in a device, as the media and messages are stored in the cloud. Messages can be a one-to-one conversation with an individual or one-to-many as in groups or channels [2], [3]. Messages can include various media formats and files up to the size of 2 GB, which makes it the best choice to share large files via instant messaging. Sent messages can be individually deleted or the whole chat history between a contact can be cleared. Telegram claims that their chat services are more secure than other instant messengers, as they use a custom protocol in providing dual layer encryption for all text and

media in chats.

Telegram is being used by the general population as well as business users. The provision to create very large groups with up to 2,00,000 members and channels with an infinite number of subscribers makes it an excellent choice to manage different teams inside an organization. Such private groups can only be joined with an invite link and the owner and admins have full control over the group's activities.

In 2021, Telegram made headlines, when WhatsApp messenger updated its privacy policy that allows Facebook to access user data and people started migrating to other messaging services that will not profiteer by selling user data [4]. In January 2021, Telegram announced the monthly number of active users has surpassed the 500 million mark. Telegram was considered the next best alternative to WhatsApp, due to its free availability, non-profit motive, value to users' privacy and secure communications. As the Russia-Ukraine tensions are at their peak in 2022, TIME magazine reported that Telegram has become a digital battlefield [5]. The app has become a conduit for communication between government officials and a news board for citizens. Ukraine's official COVID-19 Telegram channel is now used to provide updates about the war. Many cities and villages have developed their own channels or groups to disseminate important information regarding military attacks and maps to shelters.

This paper studies the various services offered by Telegram, its competition, services and corporate background. An analysis of the strengths, weaknesses, opportunities and threats of Telegram is included, along with the authors' recommendations.

2. RELATEDWORKS :

Several research works have explored the various aspects of Telegram's services and their applications in daily life. Nobari et al, in their paper, examine and contrast Telegram with many other social media platforms [6]. They show the communication process of Telegram channel and put forward a method for detecting viral messages when they've been published. Finally, they propose a method for determining the sentiments and types of communications. Chen Lou et al examined the behaviour of media usage on Telegram messaging network that allows users to receive information on their mobile devices or through online interfaces [7]. Telegram's affordances, including extensibility, easy availability, attractiveness, and activity coherence, were found to improve news consumption.

Another study looked into how to use Telegram to improve students' educational interactions and how they felt about utilizing it as an interactional platform in a university course [8]. The analysis also showed the students' opinion of Telegram as a tool for improving class discussions, as well as the drawbacks of utilizing Telegram in their course. Conde et. al. examines which tool is more effective in education: WhatsApp or Telegram, particularly when students are learning teamwork skills [9]. The goal of another research project was to create an educational materials-based e-learning solution using the Telegram bot application [10]. The materials are for an English language teaching course that uses ICT. There have also been studies on how students in higher education used text and instant messaging to communicate with their friends and professors for academic objectives [11]. All types of interactions were examined. Both text and instant messaging were mentioned as being highly familiar to the students.

Sutikno, T. et al carried out a study to compare the most popular instant messaging apps like WhatsApp, Viber and Telegram [12]. WhatsApp is the most popular smartphone app in the world, the second being Viber and Telegram in the third place. Telegram is the better choice if security is the concern. Tuja Khaundet al in examined Telegram's characteristics and propose a data collection and analysis approach [13]. Telegram is an excellent data source for studying social interactions, analyzing information campaigns, and so on. This research paves the way for a slew of upcoming Telegram research projects. Nobari et. al. examined the structural and subject features of Telegram instant messaging communications, using crawled data [14]. Telegram's bot platform is used to provide service delivery functionalities.

Studies focusing on the use of the Telegram within business organizations and educational institutions were also undertaken in recent years [15-17]. ZH Iksan et. al. [15] studied how Telegram can be used as an effective tool in education. Teachers could experiment by using the most up-to-date educational resources. Telegram is indeed a mobile learning platform. Their research looked into how Telegrams could be used in the teaching and learning process. Mahdiuon et. al. investigated the impact of Telegram usage on graduate students' academic performance and educational activities at two Iranian universities [18]. Telegram's popularity among students is a strong indicator of its educational application. The

instructional usage of Telegram and student involvement had a favourable and significant association. Telegram's academic use had an effect on academic achievement via modulating student participation. Due to the various services, it provides, such as the ability to introduce audio-visual topic explanations, as well as motivating students to search for knowledge and information independently, a study has provided evidence of the effectiveness of the Telegram social media application in improving students' reading skills, highlighting the key role of Telegram application in creating a student-centred educational environment [19]. Voronov et. al., in their paper, concentrated on the difficulties of organizations promoting themselves through telecommunication technology to find tools for efficient brand, product, and service promotion. The writers focus on the subject of growing brand recognition in Telegram messenger utilizing marketing technology [20]. Hashemi et. al. studied the behaviour of users in Telegram groups [21]. Following the investigation, measures to determine the quality of Telegram groups were uncovered. This study provides a detailed analysis of Iranian Telegram users' behaviour. The statistics and analyses may aid interested parties in gaining a better understanding of Telegram users' activity. Kermani et. al. tries to determine why Iranian users favour Telegram over other Instant Messaging Apps (IMAs) [22]. According to a survey, Telegram's reported enjoyment, social effects, perceived utility, and perceived ease of use are all higher than those of other IMAs. Furthermore, the statistics show that there is no link between Telegram use and education, age, employment, income, or gender. Another study from 2017 was on the effectiveness of telegram in encouraging tourism students to be more environmentally conscious [23]. This study informs policymakers in the field of tourism environmental education on the impact of Telegram, an ICT-based social network, on environmental education and pro-environmental behaviour among tourism students. It is feasible to use the potential of this messenger's social network to provide students with environmental education about tourism. Shobeiri et.al presented their research on the role of the social network of telegrams in the culture of environmental values, which were chosen at random from Tehran's 19 educational regions [24]. The results suggest that there is a negative relationship between the amount of use and the real perception of the telegram's content, as well as a strong positive association between the degree of participation and activity of instructors in the use of telegrams and the teachers' surroundings. That is, the more they utilize it, the less culturally significant their surroundings become. Teachers use the telegram to meet their cultural demands, according to the research. Manna et. al. presented an overview of Whatsapp and Telegram, as well as a comparison of the two in terms of modern library services [25]. They also pointed out the demerits of Whatsapp over Telegram and stated why it is recommended for library services. Nayely Quispe et al discussed about the importance of Telegram and Whatsapp in the teaching-learning process during the pandemic situation [26]. A very recent paper explored the organizational factors that affect academic information sharing via social networks [27]. The findings suggest that organizational plan, reward, and organizational culture are all important factors in influencing participants' use of social media platforms for knowledge sharing.

There has also been active research on the security features of Telegram app. Anglano et. al. presented a methodology for forensic analysis of artefacts created on Android smartphones by Telegram Messenger, the official client for the Telegram instant messaging platform, which offers a variety of secure individual and group communication options, including textual and non-textual messages, as well as voice calls [28].

Table1: Review of related works

Sl. No	Concepts analysed/Contributions	Year	Reference
1	The authors discussed how the Telegram service was used to build unidirectional and bidirectional communications and proposed a real-time messaging option where there is no need of any application servers.	2019	[29]
2	Even though Telegram is a popular messaging programme, it lacks many of the features seen on other social networking sites. So in this study authors provides a hybrid filtering-based algorithm for Telegram for giving recommendations.	2021	[30, 31]

3. OBJECTIVES :

The paper is in the form of a case study that explores the different features and services offered by telegram. The objectives of this paper are listed as follows -

(1) To survey the features of the Telegram app
(2) To identify the competitors of Telegram
(3) To study the important services offered by telegram
(4) To review the business strategies and financial information associated with the app
(5) To evaluate Telegram by employing a SWOT analysis
(6) To propose suggestions to address the drawbacks of Telegram

4. OVERVIEW :

Telegram was developed to be a free, cross-platform, encrypted, cloud-based instant messaging service, with a great focus on users' privacy. The founders have reiterated their position that private and group chats in telegram will always be ad-free [32]. Moreover, user data will never be used internally or by third parties to serve any ads. Over the years, the team behind Telegram has been continuously improving the app to perform at par with or better than other instant messenger apps like WhatsApp, Messenger, WeChat, LINE, Signal and the like. To form a detailed overview of Telegram, the features, competitors, services, corporate structure and financial information have to be studied. They are detailed in the subsections that follow.

4.1 Features:

(1) Multimedia-rich Messaging:
Like other messenger applications, Telegram allows you to send text, audio and video messages as well as share media, files, documents or even the location. Telegram supports single files as large as 2 GB to be shared. It also provides a collection of more than20,000 stickers, emojis, animated emojis and GIFs [33]. A built-in photo editor is also available to modify or enhance photographs before sharing them [34].

(2) Cloud Access and Synchronization:
Telegram is a cloud-based messaging service. The app consumes minimal storage space, as all the messages and media are stored in the cloud. This also enables the user to login to their account from multiple devices and sync messages in real-time [35].

(3) Groups and Channels:
Telegram provides the option to create groups and channels to build online communities.

(4) Voice and Video Calls:
Telegram supports one-on-one voice and video calls with end-to-end encryption. Group voice and video chats can be initiated within a Telegram group.

(5) Telegram Bots:
Bots are special accounts in Telegram, which are created by third-party developers. They are special-purpose programs used to execute repetitive and automated tasks.

(6) Telegram for Business:
Telegram features like groups, channels and bots can be used to effectively communicate with customers, generate leads and provide online services [36].

(7) Polls and Quizzes:
Telegram allows you to create polls to understand customers' opinions and interests. A poll can also be created as a quiz to engage with the audience.

(8) Security and Privacy:

Telegram states that internet privacy includes protecting private conversations from third parties and protecting the personal data from parties with commercial interests such as marketers or advertisers. Adhering to these principles, Telegram does not serve ads based on user data. Telegram displays sponsored messages or ads only in large public channels and not in private chats.

A custom protocol named MTProto was developed by Telegram based on 256-bit AES encryption, RSA encryption and Diffie-Hellman key exchange to secure messages. There are two layers of encryption – server-client encryption and client-client encryption. In addition to securing the communication network, Telegram also provides additional security features like 2-step verification, secret chats, self-destructing messages and Telegram Passport.

4.2 Competitors:

There are a dozen established players in the instant messaging domain. Some of them are backed by for-profit companies, while some others are funded by individuals or independent developers, like Telegram. The services offered by these applications vary. All such messaging services are free to use, but the range of features offered by them might vary in terms of privacy, security policy, number of members allowed in groups, availability of voice/video calls, file size limits and so on. The partial list of competitors of Telegram is presented below (not in any particular order) [37-39].

(1) WhatsApp
(2) Signal
(3) Viber
(4) Skype
(5) Google Hangouts
(6) Messenger by Meta
(7) LINE
(8) Snapchat
(9) Slack
(10) Threemo
(11) Tox
(12) KonTalk
(13) KaKaoTalk
(14) Flock
(15) ICQ New

4.3 Services:

(1) Personal Messaging:

This is the core service offered by Telegram and allows users to have multimedia-rich interactions at any time. Apart from text messages, voice messages, videos, images, documents, files and location can also be sent to your contacts. Voice and video calls are also part of Telegram's messaging service. A user can message another user on Telegram if the recipient's phone number is stored in contacts. If the phone number is unknown, they can be contacted with their Telegram username.

Personal messages are one-to-one interactions. By default, personal chats are not end-to-end encrypted [40]. In personal messages, server-client encryption is used. For an additional level of security, the secret chats feature can be used, which ensures end-to-end encryption and prevents forwarding. Secret chats also have a self-destruct timer, which when enabled, deletes the message after the recipient has read it. For personal chats, an auto-delete timer is available, which deletes the messages after a set timeframe. Sent messages can be edited anytime or even completely deleted from the chat history.

(2) Telegram Groups:

A Telegram group is a messaging service in which several individuals can communicate or contribute. A user's message will be visible to all the members of the group that he/she is part of. Telegram supports up to 2,00,000 members in a group. There are two types of groups in Telegram – one is public groups, which are accessible to all, and the other is private groups, which can only be joined through an invite link [41]. The owner and admin/s are responsible for managing their group.

The uses and applications of Telegram groups are several. They can be used by communities or groups

such as friends or classmates to engage in discussions. It can also be used in a business setting to communicate with employees, and clients and manage projects. Large public Telegram groups work like social media profiles. They are used to disseminate information and collect responses from users.

Groups support added features like mentions, reply/mention alerts, message pinning, message links, admin bots and official sticker sets [42]. The admins have the privilege to add/remove users, block members, manage messages, edit group info and add admin bots to automate some of these tasks.

Voice chat is a feature in groups, where members can join in and interact through audio. It is the equivalent of a group voice call in other messaging applications. Group video call was introduced in June 2021, as an extension of voice chats and is currently limited to the first 30 participants who join the chat [43].

(3) Telegram Channels:

Telegram channels provide a platform for one-to-many communication in the form of broadcasts. Telegram users who subscribe to a particular channel will be able to view the messages and media shared on that channel. A distinctive feature of Telegram channels is that an unlimited number of subscribers are allowed.

Similar to Telegram groups, channels can also be public or private. Private channels can only be accessed via invitation, while public channels can be searched based on their name or topic [44]. Telegram channels serve the purpose of a live blog or a social media profile. The channel admins can post messages, images, videos, podcasts, polls and quizzes, which will be served to a very large audience. As stated earlier, channels can be used to disseminate information to the public, in the event of a pandemic, war or other crises.

Even though subscribers are not allowed to interact in a channel, a discussion group can be set up for the purpose. New posts from the channel will also be displayed in the group, where subscribers can express their comments [45]. Telegram channels also support useful features such as view counters, quick sharing, follower statistics, message pinning, hashtags, silent messages, scheduled messages and message embedding on web pages.

(4) Telegram bots:

A bot is short for a robot. It is a piece of software built to carry out automated, unsupervised, repetitive tasks. A chatbot is a subclass of bots, that does automated tasks by interacting through conversations with the user. Chatbots can take user inputs through chat, process those inputs and display results [46]. It can also be a reporting mechanism that delivers continuous updates (stock price fluctuations, fault messages, ticket availability, user statistics and so on) as chat messages [47].

In the context of Telegram messenger, a bot is a special type of account, that is not managed by a user, but a software, and can send or receive messages. It works in the style of a chatbot to receive inputs from the user and perform the tasks according to its programming. In other words, a bot is a third-party application that resides within Telegram. It extends the features of the messenger and provides custom tools for businesses to automate a part of their processes and operations.

The various use cases of Telegram bots are listed below [48] –

(1) Bots can deliver regular notifications or news. Vaccine availability info, reservations, stock information, curated news or any such updates can be sent to the user at regular intervals, or when requested by the user.

(2) Bots can be integrated with other services like Gmail, IMDB, GitHub, Spotify, Trello and so on. Another such example is the Wiki bot, which can search in Wikipedia while using Telegram.

(3) Bots can allow businesses or individuals to accept payments from users.

(4) Businesses can develop custom tools to interact with their clients or answer their queries by using Telegram bots.

(5) Bots can be built as games, to provide an engaging in-app gaming experience for Telegram users.

(6) Telegram bots can deliver services based on location or proximity.

A user can interact with a bot in two ways. One is to send messages or commands to bots by opening a chat with them or integrating it with a group. The other way is to send requests directly from the input field by typing the bot's @username followed by a query. An intermediary server maintained by Telegram redirects the request to the actual server in which the bot runs.

Telegram bots can be directly integrated into groups or shared through a link. A bot link will be in the

format https://telegram.me/<bot_user_name>. All bot usernames are required to end with the word "bot". Other examples of Telegram bots are Trivia bot, Store bot, Many bot, IFTTT bot, Telegraph bot, Controller bot and BotFather [49, 50].

Telegram bots can also help admins in managing and screening the activities in groups. Some of the tasks such as screening spam messages or adult content can be done by bots. For example, RemoveSpamLinkBot is a Telegram bot that removes spam links, as and when they appear in the group [51]. Bots can be given admin status and they can even ban members based on their actions.

(5) Telegram APIs:

Telegram offers two types of APIs for developers. The first one is the Bot API, which can be used to build Telegram bots for different purposes. This API is used to link Telegram app with the actual bot application. The Bot API receives requests and commands from the user, forwards them to the bot application and fetches the appropriate responses [52]. A simple HTTPS interface with the API allows developers to get their bots up and running in no time.

The other set of APIs is used to create custom Telegram clients. Unlike other messaging apps, Telegram clients are fully open-source. Developers can create their own clients with a different look and feel using Telegram's messaging service in the background. One such example of a custom client is Telegram X, officially supported and endorsed by Telegram [53]. To work with an existing codebase and develop a client, Telegram offers TDLib (Telegram Database Library) [54]. The core functionalities and network communication features are all handled by TDLib so that developers can focus on enhancing the user experience and visual features of the app. To create a custom client from scratch, it is recommended to use the Telegram API.

4.4 Company Profile and Financials:

Telegram started operations in 2013 as a private company. It was founded by Nikolai Durov and Pavel Durov, who are also the founders of the social media platform VK. As stated in Telegram's official FAQ, the app is intended to stay free forever without any ads or subscription fees. Telegram's founder CEO Pavel Durov has outlined a strategy to partially monetize Telegram and enable sustainable operations. Telegram's ad platform is currently active, but the company has not released any info on the revenue earned. Even though ads may become an essential part of Telegram in the future, it has been stated that making profits will never be an end goal for the company. Telegram's popularity and growth can be analyzed with reference to the year-on-year increase in app downloads. Another key performance indicator is the number of monthly active users.

Table 2: Telegram downloads [55]

Year	Downloads
2014	100 million
2015	130 million
2016	220 million
2017	300 million
2018	365 million
2019	460 million
2020	540 million

Table 3: Monthly active users of Telegram [55]

Year	Users
2014	35 million
2015	60 million
2016	100 million
2017	180 million

2018	200 million
2019	300 million
2020	400 million
2021	500 million

Telegram was initially based in St. Petersburg. Due to regulatory issues, they had to change their base of operations to different cities including Berlin, Singapore and London. Currently, the company is legally registered in the British Virgin Islands and operates from Dubai, UAE [56].
As of 2022, Telegram has undertaken two funding rounds to acquire additional capital [56]. In 2018, the company raised 1.7 billion USD with investments from Oyster Ventures, Dalma Capital and ARK FUND. In 2021, Telegram raised additional capital of 1 billion USD through bonds. Information regarding the total capital and operational cost of the company is not publicly available.

5. SWOT ANALYSIS :

SWOT stands for Strengths, Weaknesses, Opportunities and Threats. SWOT analysis is a strategic planning framework, which can be used to evaluate business plans, projects, products or organizations as a whole [57]. SWOT analysis is the foundation for evaluating the internal potential and limitations and the probable/likely opportunities and threats from the external environment. It views all positive and negative factors inside and outside the firm that affect its success [58,59]. SWOT analysis studies the various factors which can be beneficial or unfavourable to a plan or entity. Strengths refer to those factors which provide an advantage over others in the domain. Weaknesses include those factors which bring a disadvantage to the organization. Opportunities are suitable conditions or situations that exist in the environment and are considered favourable. A threat is an unfavourable situation or condition that can affect the realization of the goals of the organization. Strengths and weaknesses are usually internal to the organization, while opportunities and threats are external in nature. The strengths, weaknesses, opportunities and threats of Telegram are discussed in the subsections below.

5.1 Strengths:

(1) Telegram is a free, open-source and fast instant messenger with all the essential features catering to the needs of personal users as well as business users.
(2) Telegram is one of the top 5 messenger apps globally, in terms of active monthly users [60].
(3) The visionary leadership of the founders is an essential force in the growth of Telegram.
(4) Telegram is operated by a group of talented developers and they have developed a custom encryption protocol for the messenger.
(5) Telegram is dedicated to protecting users' privacy and providing secure messaging services.

5.2 Weaknesses:

(1) Unlike other internet companies, Telegram has only one product line – the instant messenger app.
(2) Even though Telegram is known for its security, it does not provide end-to-end encryption in private chats by default.
(3) Telegram is almost entirely privately funded and is a long way from breaking even or becoming a self-sustainable business.
(4) The company goes to great lengths to avoid adverse governmental regulations and had to relocate several times. A complete relocation puts undue stress on the resources and operations of Telegram.

5.3 Opportunities:

(1) Users have begun to value their privacy over the features of messenger apps and migrate to apps that protect user data and provide a higher level of security.
(2) When the intrusive privacy policy of the competing messaging services gets exposed, users tend to migrate to Telegram [61].
(3) The functions provided by bots can be expanded to such a level that Telegram can become an all-in-one app for all our daily purposes.

5.4 Threats:

(1) Telegram groups and channels have been reported to be misused to facilitate child abuse, piracy and terrorist operations [62, 63].
(2) Competition is really strong among instant messaging services and the apps supported by technology behemoths enjoy greater advantages compared to Telegram.
(3) As Telegram protects users' privacy and does not monitor messages or posts that could abet communal violence or terrorism, it is likely to come under the scrutiny of governmental agencies [64].

6. RECOMMENDATIONS :

Telegram upholds a strict philosophy on privacy and security, proponed by its founders.This insistence on privacy acts as a double-edged sword. Users' messages are always private, meaning that there is no way to monitor illegal activities. Also, the support for large files has made Telegram a haven for digital piracy. While Telegram is striving hard to comply with regulations and cyber laws in different countries, it is apparent that the illicit activities cannot be severed from the concept of absolute privacy that Telegram offers. Based on their observations of Telegram and its various services, the authors make the following recommendations -
(1) A sustainable monetization policy has to be adopted to maintain their server infrastructure and pay their developer resources.
(2) Telegram has to deal with pirated content more seriously. Rather than dealing with pirated media as and when they are reported, it would be a better approach to flag such files beforehand and stop their circulation.
(3) Content shared by users on public groups and channels has to be strictly moderated.
(4) Rather than having a global privacy policy, it would be prudent to create separate privacy policies and terms for the region or country the user is in.
(5) Age restrictions can be placed on particular groups and channels so that underage individuals are not exposed to explicit or sensitive content.
(6) Ads can be served in large channels, with an option for the users to opt-out if required.
(7) Enforcing end-to-end encryption in all chats is an essential step to achieving the highest level of security and confidentiality.
(8) Group voice and video calls, without having to create a group, are features missing in Telegram.

7. CONCLUSIONS :

As Pavel Durov, the founder and CEO of Telegram, puts it, "Telegram is here to stay for a long time". From its bootstrapped origins in Russia, Telegram has grown to be a communication platform and social media with a global user base. It is important to note that they have resisted censorship pressure from various governments and relocated multiple times in order to prevent infringement on users' privacy by regulatory agencies. So far, Telegram has been a champion of privacy and free messaging services. With the Pavlov brothers at the helm, it can be hoped that Telegram will continue to stand by its values and offer uninterrupted messaging services to its users. As the company builds its revenue streams in the coming years, more innovative features and services can be expected from them. Among the corporate magnates that siphon off user data for commercial interests and make the ingenuous customer the "product", Telegram stands as the radical voice for internet privacy.

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