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**Abstract:** The rise in popularity of online social networks has led a large number of users to share a substantial amount of personal information on these platforms. This trend has caused privacy issues and security concerns among the users since the increased availability of personal data online increases the risk of unauthorized access, identity theft, and misuse of information. In response to these concerns, the ephemeral and anonymous online social networks have emerged in recent years. Platforms like Snapchat, Signal and WhatsApp have enabled a disappearing message setting allowing users to view and share content online for a limited period of time, before its self-destruction. The shift towards ephemeral social networks marks a new development in social media usage. Despite introducing this new dynamic to social media, various issues such as data breaches, cyber-bullying, and misinformation persist and continue to affect both conventional and upcoming social networks adversely. In an attempt to study online social networks from an ephemerality perspective, this study, spanning a period of ten years, employs a survey based approach to compare and analyze the usage patterns of users on conventional and ephemeral social networks over the period of ten years, and seeks to determine the factors affecting the usage and eventual likelihood of users migrating from conventional online social networks to ephemeral social networking platforms.

**Keywords:** communication; ephemerality; migration; privacy; social media

## I. Introduction

The rising popularity of online social interactions has led to the proliferation of online social networks. These platforms are developed to facilitate information sharing and communication. Conventional social networks such as Facebook, Twitter and Google Plus enable users to connect with their friends, family and colleagues, and share information about various aspects of their lives. The user profiles are identifiable on these social networking platforms, since all the shared information is associated with specific individuals or groups, remaining accessible from the time the user joined the platform. However, recent years have seen a shift of trend from these conventional online social networks to ephemeral social networks [1,2]. The ephemeral social networks are platforms that allow users to share information such as photos, messages or videos in a temporal fashion; only for a limited time period before it self-destructs [3]. Few examples of ephemeral social networks are Snapchat, Signal, and Instagram Stories. The temporal approach eliminates the activity history of users on the online platforms, fostering communication and interaction by enabling users to express their views, opinions and feelings with the assurance that their activities will partially or completely disappear after a certain time period. Moreover, the availability of ephemeral networking applications on the mobile platform has significantly increased their usage [4,5], potentially altering the nature of social interactions and interpersonal communications on these platforms.

This study aims to compare and analyze the usage patterns of individuals on both conventional and ephemeral social networks over a period of ten years, and examines the extent to which the ephemerality feature affects user engagement. Overall, this study addresses the following research questions:

1) Does the ephemerality feature affect the likelihood of migration of users from conventional to ephemeral social networks?

2) What are the major factors that influence the usage of both conventional and ephemeral social networks?

3) What is the probability of users continuing to use both conventional and ephemeral social networks in the future?

The structure of this paper is outlined as follows: Section 2 provides the background of the study, examining different aspects of various social networks. Section 3 provides a literature review on the previous studies done on similar topics. Section 4 describes the research design and methodology while Section 5 covers the model representation of the findings. Sections 6 and 7 present the observations of our survey design and a comprehensive discussion based on the implications of our results, respectively. Section 8 states the conclusion of this study.

## II. Background of Ephemerality in Social Networks

In this section, we explore the extent of ephemerality prevalent on various social networks through specific examples. We also examine the nature of shared information over time and analyze the degree of ephemerality offered on these platforms.

*A.  Facebook*

Facebook, a conventional social network, provides its users with numerous functionalities, including account creation and updates, chatting, blogging, content sharing, and joining organized networks [6]. The overall interface design of Facebook facilitates extensive information visibility regarding user activities. The introduction of the timeline feature in September 2006 allowed Facebook to deliver regular updates about users and their friends' activities in a news update format [7]. This feature introduces a rich timeline history for all users, which is visible to various categories of users based on individual user preferences. Thus, the ephemerality feature is user-initiated on the Facebook platform, since users can remove their shared content at any time. However, there is no provision for automatic self-destruction of information by the platform after a certain period. Overall, the interface design of Facebook emphasizing high visibility of information and history clearly eliminates the notion of ephemerality.

*B.  Instagram*

Instagram is one of the most popular platforms for image capturing and sharing. Photos shared on Instagram remain on the users' profile indefinitely, marked with a timestamp. It allows users to take pictures, edit and share images with a certain group of users (termed as 'followers'). In August 2016, Instagram launched Instagram Stories which provides users with the ephemerality feature on the Instagram platform by enabling them to post content for a limited amount of time. However, this platform initiated ephemerality feature is very limited. Information about a particular user (in this case, images) is still accessible as long as they remain on the platform [8].

*C.  Snapchat*

In contrast to above platforms, Snapchat has a time-limited image sharing application design, wherein users capture images and share them with selected contacts from their phone lists [9]. This selection is confirmed by users and not by default platform settings. The countdown feature (that users set before sharing images), however, is the most unique and distinguishes Snapchat from other social networks. This feature allows automatic deletion of images from the recipient's device after the expiration of specified time. Overall, the Snapchat platform exhibits a major example of ephemeral social network, where the temporality of content is a built-in feature.

*D.  Anonymous social networks*

Anonymous social networks, such as Whisper, Hush, Yiyak etc have transformed the nature of social interactions [10]. Whisper is one of the popular anonymous image sharing applications on the social networking circuits. It allows users to share images without personal identification markers except for a randomly assigned username by the platform. In addition to this, posts shared on the Whisper platform disappear after a certain period, although popular posts with many likes may stay

visible longer. Overall, there exists a certain level of platform initiated ephemerality on the Whisper platform that may vary depending on the popularity of the posts or images.

On reflection, significant differences in approach to ephemerality can be observed on these platforms. It is clear that both conventional and emerging online social networks exhibit unique ephemeral characteristics regardless of the content shared on these platforms. Conventional social networks like Facebook and Instagram lack platform-initiated ephemerality and rely on user actions to remove their personal information. In contrast, emerging online social networks like Snapchat and Whisper integrate ephemerality into their core design and automatically delete personal data after a specified duration. This variability in how ephemerality is handled suggests that newer social networks are more inclined to incorporate transient features.

### III. Literature Survey of Related Work

The literature review for this study is organized into three sections including (1) Dimensions and perspectives in online social networks, (2) Comparison of online social networks and (3) Ephemeral social networks

#### a. A. Dimensions and Perspectives in Online Social Networks

This section explores the various dimensions and perspectives through which online social networks have been analyzed. Existing research on privacy within online social networks is focused on the interaction between certain entities and their relative actions on these platforms [11–13]. Typically, these studies emphasize the relative importance of two entities 'inquirer' and 'situation', in shaping the manner in which information disclosed on these platforms are shared with third-party applications [14–17]. However, most of these studies are constrained by their focus on specific age groups and regions.

Another set of studies focus on examining the sensitivity of information and the role of compensation on online social networks. These studies highlight the significance of monetary compensation as an influencing factor for disclosure of sensitive information on online social networks [13,18]. Such research studies basically have a prime motivation to address and emphasize various privacy dimensions like secrecy, anonymity, transparency and control [19]. Although these studies provide valuable insights, they often lack practical application in current social networks by not addressing the rise of ephemeral social networks. This study focuses on identity management on online social networks based on the aforementioned dimensions, and presents several privacy notions from an interdisciplinary point of view, keeping ephemerality features in mind.

Additionally, several studies have contributed significantly to identifying privacy dimensions from the perspective of user interface design [15,20,21]. These studies have identified weaknesses in privacy settings based on the user interface designs and proposed potential solutions. However, the scope of these studies is limited to a general layout structure of online social networks rather than specific social platforms. Yet another set of research studies have investigated privacy preferences and concerns based on user reported data and observed behavioral data [22–24]. These studies focused on personal information as a very vital factor, and analyzed user preferences related to privacy of their personal information [25,26]. The conclusions in these studies are drawn based on data visibility on a single social network (in this case, Facebook) and by involving a narrow group of participants.

#### b. B. Comparison of Online Social Networks

This section reviews studies that compare online social networks. Due to the high availability of background information, a significant portion of research is focused on comparing Facebook with other social networks [27,28]. For instance, one study compared the trust and privacy concerns between Facebook and MySpace, and determined how these concerns influence the strength of online relationships [28]. However, the authors do not address the possible alteration in user behavior with changes in privacy issues. In another study, a comparison was made between user profiles and

characteristics across different online social networks, considering the influence of demographic information on the usage of different social networks [29]. However, despite its valuable insights, this study lacks a comparison with mobile and ephemeral social networks, which have become increasingly prevalent in recent years.    Many online sources and blogs offer comparative analysis of online and ephemeral social networks [29]. However, these analyses often focus on existing features and functionalities, and do not analyze and compare the usage patterns and trends of users for any of the social networks. Overall, the existing comparative studies emphasize on demographics, features and functionalities, and usage statistics while overlooking the emerging trends and the ways in which mobile or ephemeral platforms impact user behavior and interaction.

### c. C. Ephemeral Social Networks

Ephemeral social networks such as Snapchat, Whisper, Signal, and Yiyak allow users to publish and share information in a self-destruction fashion after a specified period. By eliminating the conventional notions of having historical information or activity traces, these platforms encourage more spontaneous communications between users. These platforms allow users to express their views, opinions and feelings with the assurance of disappearing content from the platform after a certain period of time [10]. The availability of these networking applications on mobile devices has resulted in a boost in their popularity. Applications such as Signal and Snapchat, built with ephemeral design, have been consistently ranked among the top downloaded apps over the past few years, with rapid growth of user population, estimated in millions so far. Instagram Stories also has been adopted very rapidly and is more widely used by users than traditional Instagram posts. Despite this surge in popularity, there is a notable lack of comprehensive studies that analyze the detailed usage patterns and functionalities of these platforms, beyond individual case studies [10,27,29].

Few studies have explored the factors that drive users to ephemeral social networks [9]. These studies have particularly focused on the nature of communication and suggested that users prefer ephemeral social networks due to the ease of data deletion from these platform; highlighting the temporary nature of communications as a primary attraction. This necessarily helps them to indulge in communication which may be intimate in nature. Users feel more comfortable to share personal or private information with their peer groups on these platforms due to the ephemerality feature that essentially ensures that the data would be deleted from the platform after a certain amount of time.

### IV. Research Methodology

### d. A. Participants

The participants for the survey study were recruited from multiple backgrounds with majority participants being students studying graduate and undergraduate degrees, as well as recent graduates. A key factor for this selection was the participants' high engagement in both conventional and ephemeral social networks [30]. All the recruited participants were in the age group between 18 and 30.

### e. B. Survey Design

The survey questions were structured into three main sections namely participant demographics, social networks usage frequency and factors influencing social networks usage.
1) Demographics
Pertaining to participant demographics, data was collected related to their gender, age and educational background, as represented in Figure 1. This information was helpful in exploring usage patterns across different backgrounds.

Based on the demographic information collected, we anticipated variations in responses between participants with technical and non-technical educational backgrounds. Participants from technical fields may provide more detailed responses due to their familiarity with technology. However, participants from non-technical backgrounds, particularly those in the legal field, may also

offer informed responses given their knowledge of privacy policies and platform terms and conditions.



**Figure 1.** Survey of participant demographics.

2) Frequency of Social Network Usage

Participant responses were recorded on a Likert scale, regarding their usage frequency and experience of various types of social networks (Figure 2). The lowest scale value corresponded to a rare use of a particular social network while the highest value corresponded to frequent usage. These responses were recorded for individual social networks, and analyzed. Through this data, we aimed to provide valuable insights into the usage patterns of both conventional and ephemeral social networks. This analysis also helped us understand common trends and behaviors in online social network usage.



**Figure 2.** Survey of social media usage frequency among participants.

3) Factors influencing user choice

The final section investigated the key factors affecting participants' choices and behaviors on social networks to understand motivations behind their preferences. We attempted to understand what users consider important when engaging with these platforms, particularly with regard to ephemeral networks, which offer features like temporary content, varying degrees of ephemerality, different communication modes, and anonymous posting. By evaluating the importance of these factors, along with others like network size, peer group size, ease of use, and privacy features, we sought insights into user perceptions and the factors that drive their social network usage.



**Figure 3.** Survey of key influencing factors on user' choice for social networks.

4) Identifying Patterns

We also explored whether there was a ranking of factors that influence social network usage and whether any patterns emerge among users. Additionally, we investigated potential correlations between the frequency of social network usage and the factors influencing this usage, to determine the impact of each factor on social network engagement.

Thus, while the first section was focused on understanding individual demographics, the next two sections were dedicated to understanding individuals' usage of online social networks as well as individuals' perception about various factors influencing their usage of social networks. Moreover, various open ended questions were included in the survey in order to obtain a deeper and more detailed understanding of users' responses in all the sections, and determine what factors drive the usage of social networks for different individuals. We anticipated that rather than a complete migration, many users might engage in dual usage of both conventional and ephemeral platforms. Additionally, as a concluding question, we asked users to describe any negative experiences they had that may have influenced their use of particular social networks. The responses from this section were analyzed in conjunction with those from the following section to provide deeper insights into user motivations.

By aggregating responses across all sections, we attempted to identify the primary drivers of social network usage for different users, and the degree of influence of ephemeral social networks and its various features. Overall, we aimed to gain an idea about the future potential of online social networks of similar nature, and also see how the various factors influencing social network usage interrelate and understand whether there is consistency in user perspectives. Altogether, these factors combined will improve our understanding of different dimensions of social network usage, and user attitudes towards both conventional and ephemeral platforms.

*f. C. Survey Implementation*

The survey was administered using the Google Forms, and the participants were provided access through a link. The responses were recorded in a back-end database managed using Microsoft Excel. Although the survey was conducted online, the interviews were conducted as a physical classroom session. This approach allowed timely instructions and assistance to the survey participants, in addressing confusions regarding specific terms or concepts in the survey.   The in-person setting ensured that participants receive necessary clarifications, leading to more accurate and complete responses. Given that we conducted the study ten years apart, we shared instructions via email and conference video calls when we conducted the survey for the second time.

*g. D. Data Collection and Processing*

The nature of responses was expected to vary depending on the questions. The responses were primarily collected through Likert scale rating, with additional responses recorded in a tabular format in a flat database file. Apart from this, the open ended responses were stored for further detailed analysis. After aggregating the data, they were checked for any errors, or outliers such as anomalous responses. The data was also segmented based on demographic information to gain more insights into the user preferences for social media platforms, and draw more meaningful conclusions.

*h. E. Data Analysis*

The data analysis mainly focused on correlation analysis to explore relationships between different variables in the research study. After collecting the survey responses from the participants, they were formatted in tabular structure, and correlation coefficients were calculated to determine the strength of relationships between conventional and ephemeral social networks. Overall, this approach primarily led to answering the research questions. Additionally, we analyzed responses to open ended questions and conducted a text based analysis to identify trends and patterns in users' perspectives on factors influencing their usage of social networks. We also employed specific analysis procedures at later stages depending on the nature of data characteristics and insights gained during the analysis phase.
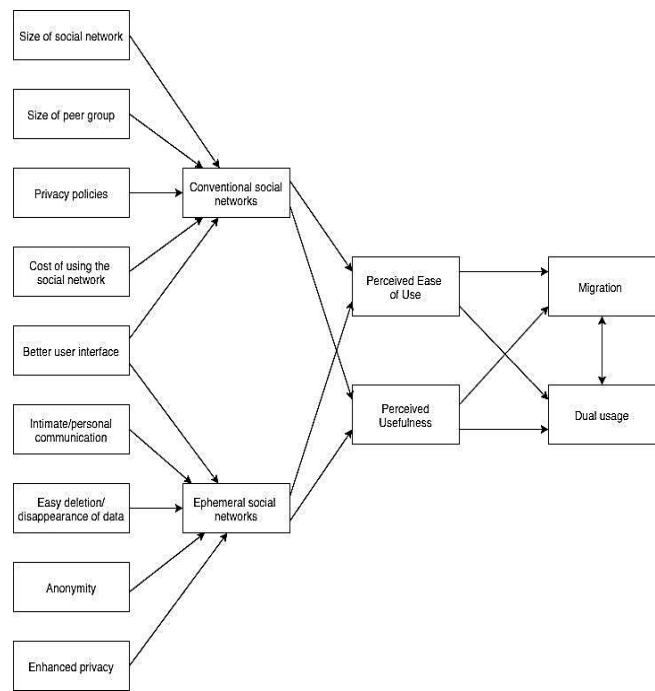
**V. Model Development**

In this section, we outline the preliminary design for our study model. For the design, we draw inspiration from a previous technology switching and satisfaction model [31]. Using a survey design, this research study tried to understand the factors and their influence on users' decision to switch from current to new technology service [31]. In addition, our model also assessed costs and benefits of different technologies based on the factors identified. Once all these components were identified, the model was developed by integrating these elements. Overall, with our model, we aim to understand how various factors collectively influence technology usage and the relative importance of each factor in migration of users from conventional to ephemeral social networks.

We began our analysis by mapping factors relevant to both conventional and ephemeral social networks, while focusing on users' perspectives about these factors and how they affect their usage of online social networks. The users' perspectives are indicated by perceived ease of use and perceived usefulness in the model. Here, we define perceived ease of use as the component that defines the primary reason behind the usage of a particular type of social network. It reflects the satisfaction of users' met by fulfillment of fundamental needs behind using social networks. The perceived usefulness pertains to the secondary reasons for using a social network and reflects additional benefits and functionalities beyond basic needs.

Based on the users' responses, we analyzed the influence of the above mentioned components and assessed the likelihood of users either migrating to ephemeral social networks or exhibiting a dual usage of both conventional and ephemeral social networks. The preliminary model design represented as Figure 4 illustrates the interdependence of all components and how perceived ease of

use and perceived usefulness can lead to either a shift to ephemeral social networks or a pattern of dual usage.



**Figure 4.** Preliminary model highlighting user migration from conventional to ephemeral social networks.

## VI. Outcomes of Survey

### i. A. Demographics

Adopting a long-term perspective in this study, we conducted surveys and reviewed participant responses at two points in time, 10 years apart, to gain a comprehensive understanding of the evolving usage patterns of conventional and ephemeral social media platforms. The demographic distribution of participants remained largely consistent over the decade, with the only notable addition of a few working professionals in the most recent survey conducted in 2024.

### j. B. Usage Frequency

In terms of usage frequency, there was little variation observed in the use of conventional social media platforms. For instance, the usage of Facebook and Instagram remained steady over the 10-year period, with users primarily engaging with these platforms to stay connected with family, friends, and to utilize services like Facebook Marketplace. On the other hand, the number of ephemeral social media platforms and their usage increased steadily during the same period. Ephemeral platforms like Snapchat, which gained popularity around a decade ago, initially experienced slow adoption. However, while Snapchat saw a rise in popularity, platforms like Whisper and YikYak eventually became obsolete. During this period, additional ephemeral platforms such as TikTok, Signal, and Instagram Stories (a feature within Instagram) emerged and quickly gained attraction due to their focus on short-form video content and ephemerality.

### C. Influencing factors

Analysis of responses to open-ended questions revealed a distinct difference in the usage objectives of traditional social media platforms like Facebook and Instagram compared to ephemeral platforms such as Snapchat, Signal, and Instagram Stories. Most users use Facebook and Instagram for features like Facebook Marketplace and maintaining connections with long-term friends. Their active engagement with these platforms is limited, with the primary objective being to stay informed about significant events or updates shared by friends, relatives and others in their network. On the

other hand, ephemeral platforms such as Snapchat, Signal and Instagram Stories are used for frequent interactions with friends and peer groups. The temporary nature of content and conversations on these platforms makes users feel more comfortable sharing content and messages that disappear after a set period. Moreover, the ability to control who within their network can view this content, and for how long, is a significant factor driving the use of these platforms. Another key factor reported by users is the option to post anonymously on some ephemeral platforms. The combination of anonymity and ephemerality provides users with a heightened sense of privacy.

This is also supported by users' responses to rating the factors that influence their usage of social media platforms. On a scale of 1 to 5 with 1 representing very unimportant and 5 representing very important, the average rating for selected factors influencing adoption and usage of social media platforms were as follows:
- Size of peer network on the platform: 3
- Ease of use of the platform: 3
- Ability to post anonymously: 3.2
- Ephemerality: 3
- Impact on user privacy: 3.6
- Impact on peer group privacy: 3.2

Additionally, some users reported negative experiences related to phishing on traditional social media platforms. One participant mentioned losing a job opportunity after a potential employer found pictures from a party on their Facebook profile shared a few years ago, during a background check. In contrast, another user encountered adult content on Snapchat once; however, it did not affect his usage of the platform, as the content disappeared after a few minutes.

## VII. Discussion

The online social networks connect individuals with family, friends and relatives while expanding their connections with like-minded people. The social networks, both conventional and ephemeral, excel in user engagement, as evidenced by their significant growth over time [32,33]. However, there are growing concerns about privacy and the risks of oversharing that comes along with the ease of communication and exposure on online platforms [33]. The present study examined factors that influence social network usage and assessed the extent to which the ephemerality feature affects user engagement to understand the potential shift towards ephemeral platforms from conventional networks. In this section, we offer insights into the current acceptance of ephemerality among users based on the survey responses and model design.

To address the research questions, the following points are highlighted.

1. While ephemerality is not the primary factor, it is one of the key features influencing users' likelihood of transitioning from conventional to ephemeral platforms.

2. According to our survey, the factors most likely to impact social platform adoption, ranked by importance, are user privacy, peer group privacy and anonymous posting, followed by ephemerality, size of peer network, and ease of platform use. These factors may drive users to migrate to ephemeral platforms.

3. There is a strong likelihood that users will continue using both conventional and ephemeral social platforms in the future, with more gravity towards ephemeral networks.

The consistent demographic distribution observed over the decade in this study suggests that changes in social media usage patterns are more likely driven by shifts in user preferences and technological advancements than by changes in demographics (except younger age that may prefer ephemerality over conventional design). The user preferences encompass reasons like privacy concerns [34], pressure to maintain perfect image (social psychological impact) [35], quicker social engagement [36] and platform fatigue [37].

Our findings also suggest that different users prioritize various factors such as anonymity and private interactions when selecting social media platforms. In this regard, ephemeral platforms are

preferred due to in-built features like content temporality and anonymity playing key roles in enhancing user engagement. Besides, studies have suggested that ephemeral platforms motivate users to log in more frequently to remain updated with ongoing trends [38]. Some research articles have described this as "fear of missing out" (FOMO) and characterized this scenario as a strong negative social psychological impact of online social media [38,40]. Considering the strong impact of FOMO from a marketing point of view, it is very likely to contribute to the evolution of various ephemeral platforms, potentially becoming an unintentional yet major factor driving user migration towards them in the future.

At the same time, over a decade-long consistency in use of conventional platforms like Facebook and Instagram observed in this survey indicates that these platforms have become essential for maintaining long-term relationships and accessing online services and marketplaces. The active user engagement and interactions are now becoming limited on these platforms [41,42]. Along with consistent use of conventional platforms, the rise and fall of various ephemeral platforms over the years further suggests that both user preferences and platform designs are still evolving. Given the wide scale variability in network preferences, it is also likely for users to engage with both conventional and ephemeral social networks in future, especially since many existing platforms support coexistence of both features.

Overall, as represented in our model design, the user migration or maintaining dual usage largely depends on how social platforms align with user preferences. Basically it indicates that users who find ephemeral networks both easy to use and meet their preferences, like innovative features, privacy controls, or casual, temporary interactions, may gradually shift away from conventional networks. For instance, around 20% of conservative users of ephemeral social networks in our survey sample expressed a willingness to increase their usage of these platforms in the future, if their preference for enhanced privacy (offered by anonymity) is met. If both types of platforms align with user preferences, they may adopt a pattern of dual usage, leveraging the strengths of each platform. For example, they might use conventional networks for professional networking and permanent connections, and ephemeral networks for private and temporary interactions.

## VIII. CONCLUSION

The social media platforms, both conventional and ephemeral, are likely to continue evolving until they meet the changing needs of their users, with privacy and control playing a central role in their adoption. A gradual shift in user engagement towards ephemeral networks may be expected since they prioritize features like privacy and anonymity. At the same time, the potential for dual usage also remains high, with users leveraging the strengths of both platforms to meet their diverse expectations from social media networks.

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