

Review Article

Research Paper on Pro and Cons of Mobile Big Data

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Abstract - Nowadays, the concept of Big Data has acquired more popularity in the field of Education, the IT industry, Business, Healthcare, and many more fields. Big data is generated every day by the communication of billions of people using mobiles, computers, GPS devices, sensors, and medical devices, etc. Today big data creates a huge opportunity for those who can use it efficiently. Detection of previously unknown meaningful patterns and knowledge from a few Gigabytes to Exabyte of data collected from mobile users at the network level or the app-level is termed as MBD. New wave has provided mobile operators a huge opportunity to collect an enormous amount of data to monitor the technical and transactional aspects of their networks. In this paper, we focus on how the flood of data gathered from heterogeneous Mobile applications such as communication-oriented applications, bank-related applications, commercial applications, etc. furthermore, we discuss the impact of these gathered data on human life routine. We investigated the usage and effect of WhatsApp and facebook by conducting a survey. This article focus to come up with an integrated representation of this emerging field to bridge multiple disciplines and hopefully to motivate future research.

Keywords - Big Data, MBD, Mobile Applications, WhatsApp, Facebook.

I. INTRODUCTION

Big Data is a term that describes a huge volume of data that grows exponentially with time. In the digital world, data are produced from different sources, and the rapid transition from digital technologies leads to the growth of big data. Presently, real-time data is gathered from billions of end-users across publicly shared comments on social networks and websites, voluntarily gathered from personal electronics and apps, through questionnaires, product purchases, and electronic check-ins. For example, The New York Stock Exchange generates about *one terabyte* of new trade data per day.[1].The user data that is being collected on social networking platforms allows marketers to have a better understanding of the customer behavior, target audience groups . Big Data helps the companies to create ample of opportunities; these companies have various information about the products and services, buyers and suppliers,

consumer preferences that can be recorded and examined. Especially Rapid growth in the field of telecommunications, telecom operators have been put to the test of big mobile data because it has a vast, diverged, and complex structure with challenges to store and analyze. With the successes of the Wireless network and different generations of smartphones, a mobile device has become the core of almost everyone's daily life. Nowadays, a mobile phone can not only send voice and text messages, but also easily and smoothly access the Internet, which has been recognized as the most revolutionary development of mobile Internet (M-Internet). This has led to great innovation in mobile phone development over the past 20 years. At the present time, these smartphones are capable of doing things that a computer can do. With the growth of technology, these smartphones are becoming more and more powerful in terms of storage and computing factors. Apart from being a communication device, Mobile phones also perform many tasks such as internet browsing, game playing, multimedia functionalities, and application usage, etc. This leads to the mobile phones collecting a large amount of data regarding their usage. It is very important for the analysts to examine the data generated by mobile phones . Mining a huge amount of data from a mobile device has attracted great interest from various research communities. In this paper, we focus on how user data collected from heterogeneous Smartphone applications such as Facebook, Linkedin, Whatsapp, google pay impact on human life



Fig. 1 Smart Phone with social media apps



II. FACEBOOK

The world’s largest and most famous social network was founded by Mark Zuckerberg while he was a student at Harvard University, in early 2004[2]. The key function of Facebook is to allow users to connect with friends and familiarity. The ‘action’ takes place along a feed known as the timeline, on which you can read updates posted by your friends. Over the years, this functionality has expanded to include multimedia content, and ‘sharing’ – the re-posting of content initially posted by others on Facebook or elsewhere. Today mobile apps for Facebook, launched in 2008 on iOS and 2010 on Android, can be found on users’ phones across the globe [3]. With the time active users of the Facebook increased, With roughly 2.8 billion monthly active users as of the fourth quarter of 2020, Facebook is the biggest social network worldwide [4], Facebook stores vast amounts of user data, making it a huge data wonderland, We might have seen one of the videos on Facebook that shows a “flashback” of posts, likes, or images, your birthday or on the anniversary of becoming friends with someone? If so, these are a few examples of how Facebook uses your data for the processing of these things; in the beginning, this information may not seem to mean very much. But with these types of data, Facebook knows-“who our friends are, what we look like, where we are, what we are doing, our likes, our dislikes, and much more. A few researchers even say Facebook has adequate data to know us better than our therapists. More surprisingly, Facebook tracks user data on its platform – that’s why it comes back with your birthday photos from five years ago, and favorite memories. Its how the growing tech giant is able to connect you to people; you might know and suggest who you should tag in photos. However, there’s a lot of concern over how much data Facebook collects and what kinds of data it keeps. But you might not yet understand the scope and the depth of its tracking all across the internet [5] “Facebook can learn almost anything about you by using artificial intelligence to analyze your behavior,” said Peter Eckersley, the chief computer scientist [6]

Facebook can collect whatever information you give to it, and it can collect some information you don’t share with it. Facebook has a terrible track record for keeping user information safe and secure. When the Facebook user clicks on agreed to allow, it means we are giving them permission to record or fetch all our activities like who you search, what groups you’re part of, your entire social network, and everything you share in Messenger. Facebook uses this information for its profit—specifically, it makes money through targeted ads based on our data and things you search for on the internet. Many Facebook users don’t understand how deeply connected everything is to Facebook advertisements [7]

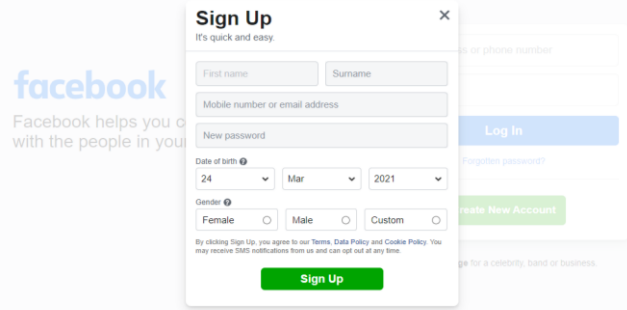


Fig. 2 Facebook login page with terms and conditions

Facebook even collects the data like IP address, what advertisements you’ve clicked on, which browser you’re using, and how often you visit the site; it is already data any website you visit can record about you from outside the website even after logging off from its site. It’s worrying when you look at how much of your information Facebook knows about you just from visiting its site. Additionally, when we search for something in commercial websites like shopping websites, it shows similar content related to that search when we login to facebook.



Fig. 3 Facebook activities

III. WHATSAPP

Nowadays, one of the most popular mobile applications used for providing instant messaging service in smartphones is WhatsApp. Users or groups can communicate different types of text and multimedia messages using Internet services [8] WhatsApp created in 2009 by two former Yahoo employees, Brian Acton and Jan Koum. The consequence of WhatsApp keeps on increasing in our lives, culture, and society. At present, it is one of the popular tools for marketing in businesses, communication, and publicity in politics. This development has also drawn the attention of researchers to study the implications and effect of WhatsApp on its user’s social and personal life.[8]. As of January 2021, two billion users were accessing the WhatsApp messenger on a monthly basis [9].

Table 1. Features available in WhatsApp

Application	Features
WhatsApp	<ul style="list-style-type: none"> • Send and receive Text chat • Send and receive images • Send and receive videos • Send and receive audios • Group chat • Sharing V-card and contacts • Send and receive location information • Update and view status • Hide and unhide online status • Voice call and video call

WhatsApp keeps an eye on our activities in it. When you send a message to a person in your contact on WhatsApp, all the information related to the message is recorded, for example, message content, time, location, recipient info, and also some device information is collected. WhatsApp provides end-to-end encryption in the app to support privacy .this end-to-end encryption is used to keep information safe from third parties. It’s important to know how WhatsApp attacks your privacy [10]. “Metadata—data about your data,” says Cyjax CISO Ian Thornton-Trump, “is almost as powerful as the *actual* data. “Such a metadata about conversations is collected in WhatsApp .whatsapp Metadata contains data such as who you know, who you message, when and how often. And other activities can be tracked to your user ID [11]. WhatsApp metadata contents are categorized into three they are Information the user provides, the information they automatically collect, and information provided by third parties [12]

Table 2. Information contained in Metadata

Information The user provides	Information they automatically collect	Information provided by third parties
<ul style="list-style-type: none"> • Your account information • Your messages • Your connections • Customer support 	<ul style="list-style-type: none"> • Usage and log information • Transactional information • Device and connection information • Cookies • Status information 	<ul style="list-style-type: none"> • Information others provide about you • Third-party providers • Third-party services

WhatsApp has attracted a lot of attention because of its large-scale usage of end-to-end encryption, a first of its kind. The purpose is to re-instate users' trust in using chat apps without worrying about privacy and security concerns. In this paper, we went over the various fundamental of advanced

cryptography protocols that enable the various security and privacy properties of WhatsApp. We discussed these features and how successful WhatsApp has been by deploying them in their security architecture. We also went over the privacy concerns that still remain due to metadata remaining unencrypted and within the territory of the app provider [13] These kinds of development in Whatsapp have also drawn the attention of researchers to understand the implications and cause of WhatsApp on its user’s social and personal life. When it comes to safety, users believes that the data they share is secure at WhatsApp, but in reality, they are using user’s data for their profit.

User’s engaged themselves in using WhatsApp due to which they feel that their time is consumed by WhatsApp, it has created a way of belongingness, distance, and intimacy with friends and relatives. But it has created a huge gap between the people around us [14]

IV. RESEARCH METHODS

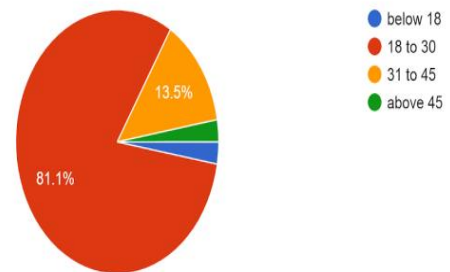
The study uses a survey, open-source software for conducting online surveys. A google form was developed with questions to measure the statistics of users, usage of WhatsApp, Facebook, the intensity of usage, depth of security, and impact on the social and private life of users.

This study examines the usage and impact of WhatsApp and facebook's mobile applications among the users of different age groups. The objectives for the study are:

- To analyze the intensity of usage of WhatsApp and Facebook.
- To analyze data security in facebook and WhatsApp among its users.
- To seek the frequency of usage of WhatsApp and facebook.
- To explore the impact of social media on individual personal and social life.

V. RESULTS AND DISCUSSION

A survey was conducted on actual users of smartphone instant messengers. The questionnaire has been performed as an internet-based survey using open-source web survey software and obtained responses.



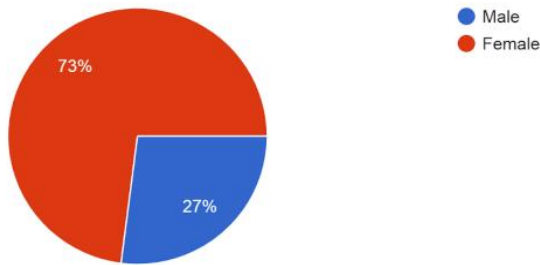


Fig. 1 Age and gender of Participants

The above figure shows that most of adult WhatsApp and facebook users belong to the age group of 18 to 30 years. We have not received any entry apart from male and female. The gender distribution reflects that only 73% of women candidates have participated in the survey compared to male candidates.

How many hour in a day you are using whatsapp ?

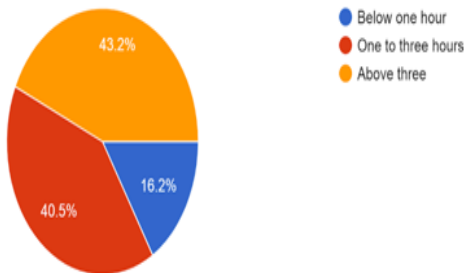
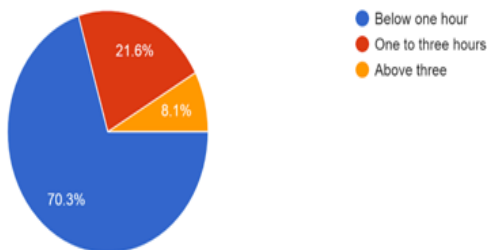


Fig. 2 Intensity of time usage in Whatsapp and facebook

The above figure shows that most of the participants are using WhatsApp more than three hours a day and less than one hour on Facebook.

How many hour in a day you are using Facebook ?



Do you believe WhatsApp is safe place for you to display personal Information?

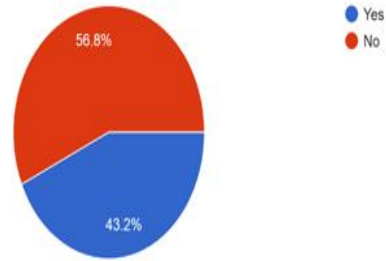
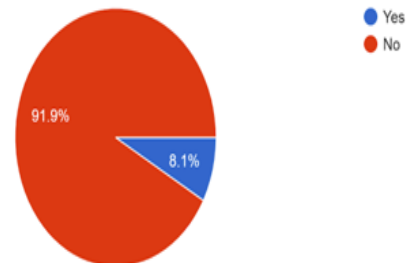


Fig. 3 Participants' views on the safety of their personal data

As Per the above figure, 56.8% of the participants believe that their data are not safe on Whatsapp, and 91.9% of the participants believe that data are not safe on Facebook.

Do you believe Facebook is safe place for you to display personal Information?



Do you think your personal information is misused in social Media?

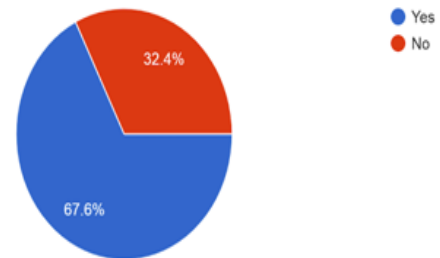


Fig. 4 Participants view on data security in social media

As per the survey conducted, about 67.6% of participants think that their personal data is not safe on social media platforms.

VI. CONCLUSION

Social Networking sites are a double-edged sword. The mobile applications like Facebook, WhatsApp, Instagram, etc., are a boon or curse for the user to decide. It depends on the user to what extent he uses it. If you're using WhatsApp, Facebook, Google, or any other apps or websites, always be

careful how much personal information you share. It's so important for your personal online safety to be aware of what you're sharing, where you're communicating, and how much info you're giving to large tech companies. It can be useful for improving skills, ideas, and sharing thoughts. It can also be used as revolutionary in the paradigm of education and as an effective business tool. On the other hand, social media has created high levels of addiction. Gossips and rumors spread like forest fires. Privacy is a big issue with social networking sites. People's personal information gets stolen for malicious intentions. Facebook has been in serious trouble with much legislation across the globe for this very reason. It is important to note that children and teenagers must be guided by their guardians as they can easily be manipulated and have a high tendency of falling into traps that lead to cyber threats or cybercrimes.

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