

Cyber security in Research and Academics due to Social Media

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Abstract—Internet is undoubtedly a revolution in technology which has brought tremendous changes in communication. It has succeeded in creating a forum for research opportunities, assisted in communicating with people and has brought the world much closer. Gone are the days when people used to wait for hours, days and even months to get a message delivered. Social media has indeed made our lives much more easier and it has created opportunities to socialize and bond with different people irrespective of their location, social status or even their attitude. It would not be wrong to say that social media has enhanced research opportunities. There various social media platforms like LinkedIn, ORCID, ResearchGate, Twitter, Facebook, YouTube, etc, could be an excellent method to promote ones research. Social media also assist in sharing our research work with a larger audience. Social media channels may also help you to access up-to-date information in your field, stay in contact with colleagues, and exchange ideas on different subjects. Many researchers and scientists know that social media platforms are a great tool for drawing attention to their work and interacting with the research community, many of them are still not using these resources to their potentiality. “Social media really doesn’t take that much time. I tend to use it mostly in the evenings before bedtime and in between meetings,” [1] asserted Santa Ono, president of the University of Cincinnati. Ono, who has over 69,000 followers on Twitter alone, is one of the most social media-savvy administrators in academia. However social media has disadvantages too. A research carried out to show that it leads to poor academic performance among the students. It consumes lot of time that should have been used to develop academic growth. It also leads to bizarre medical effects among the researchers who spend their time locating information online. It may affect their eyesight and other mental illness. Not only that, researchers also the victims of plagiarism. When the academic works of various researchers get published online, it gets plagiarized by other researchers who put it in their academic work. Therefore the paper would be purely theoretical and it would emphasize on the various opportunities that is available to a scholar through internet for enhancement of research opportunities and it would also bring out the drastic impacts which could be faced by a student due to social media and what could be the possible measures to curb these measures for its security. It would contribute to analyze the further scope of understanding the

hazardous effect and taking measures to prevent getting victimized.

Keywords—Research, Social media, academics, social networking sites

I. INTRODUCTION

The work of academics has radically changed since the introduction of social media tools. One area that has received considerable attention is that of real-time technologies for communication and collaboration. Academics can use tools such as Google Docs, Skype and Dropbox to facilitate the exchange of information, the dissemination of research findings and the creation of new knowledge in real time.

Extensive research has tracked how electronic publishing is influencing the information-seeking and reading behavior of scholars. Tenopir et al., "showed that scholars' use of electronic information has increased substantially over time as academic libraries transit from print to electronic collections." [2] The adoption of electronic information in academic settings has been extremely successful. Despite minor disciplinary differences more related to the amount of electronic information available in each field than to substantial differences in scholars' inclination towards the use electronic resources — electronic databases and journals have been rapidly adopted by scholars. Recent research in the United Kingdom (Nicholas et al., shows that academic journals are central to all academic fields and that the electronic form is the prime means of access. [3] Similarly, in the United States, Niu et al., report the predominance of the use of electronic methods for searching and accessing scholarly content. [4]

Among the most recent developments in the creation and communication of information in electronic format are the social media, a term that refers to a set of web technologies that allow the creation and exchange of user-generated content. According to the OECD "user-generated content must meet three requirements: it must be publicly available over the Internet; it must show a certain amount of creative effort; and it must have been compiled outside professional routines and practices." [5] Based on this definition and on a set of theories in the field of media research and social processes, Kaplan and

Haenlein "classify social media in six categories: collaborative projects, blogs and microblogs, content communities, social networking sites, virtual game worlds, and virtual social worlds. The unifying term "Web 2.0" is closely related to the concept of social media." [6] This term "refers to technologies characterized as being user-centered, open, participatory, interactive and knowledgesharing." [8] Since social media are intended to support the collaborative creation and dissemination of knowledge, it is not surprising that scholars have explored their use for academic purposes, and that a number of social media services specifically targeted at the academic community — blogs, online comments to articles, social bookmarking sites, wikis, websites to post slides, text or videos, etc. have emerged in the last few years.

Rest of the paper is divided in following section. Section II, discuss literature review, Section III explain the role of social media for creating research opportunities. Section IV explains hazardous effect of using social media. In Section V, we proposed measures to curb the danger and finally in Section VI, we conclude our paper with conclusion with future work overview.

II. REVIEW OF LITERATURE

There Kaplan and Haenlein defined social media as " ... a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content" [9]. "The emergence of social media technologies has been embraced by a growing number of users who post text messages, pictures, and videos online," [10] Reports of worldwide social networking activity suggest that there were 1.96 billion users in 2015 with predictions of 2.44 billion users by 2018 [11]. "Of all the social networking sites, Facebook, Twitter, and YouTube are among the most popular ranking within the top 10 of a list of most heavily visited sites on the web" [12]. The combination of prolific user activity and production of user-generated content has captured the attention of scholars and researchers who seek to understand social media and its role in contemporary society. Social media research encompasses any form of research that uses data derived from social media sources. Research in this environment can be classified into two types: using social media as a research tool (such as the use of surveys on social media platforms) and research on the activity and content of social media itself. Social media research varies from other forms of online research, such as internet-based surveys or webpage reviewing, due to the social nature of the data being extracted from purpose-built platforms. As with any new form of research, several methodological points must be taken into consideration in order to ensure that rigour is maintained; such practicalities will be discussed in this and subsequent chapters of this guidance document. As with other methods, social media research should be considered one tool in a researcher's toolkit. Whilst some research questions may only use social media research methods, many research questions will benefit from the use of social media research in addition to other methods. 4.2. The social media research project lifecycle The diagram on the following pages details the main

considerations likely to be required during the lifecycle of a social media research project. It uses the Cabinet Office framework for data science projects, as there are numerous parallels here. It also includes examples from two real government projects which made use of social media data. The first is the Food Standards Agency using Twitter to predict cases of Norovirus [13] and the second is the Scottish Government using social media data to assess experiences of the XX Commonwealth Games (Scottish Government Social Research, 2015).

III. ROLE OF SOCIAL MEDIA FOR CREATING RESEARCH OPPORTUNITIES

Digital Social media research refers to a set of tools and techniques of extracting and analyzing data from social media channels and the Internet. These include, among other things, aggregating social data related to specific events or issues and supporting analysis along spatial, temporal, thematic, and sentiment/psychosocial dimensions.

Given its nature, social media research represents a useful research resource to understand what social media channels are being used, in what way, by whom and what is being said. Thus, social media research relates more to a method of monitoring and (naturally) observing the content and information produced in the Internet and popular social media channels, instead of a method for doing systematic research in the traditional way.

Social media research can present a number of challenges and opportunities for research validity and reliability. As a result, careful research design is required with clear research objectives and questions and the appropriate selection of analytical tools. [14] If initial findings are statistically significant then they should be verified using at least one more distinct additional dataset which has been collected at a different time, using different methods, or on a different platform. If not, it may be necessary to reduce the scope of a study or reframe its central hypothesis to address a more specific aspect of human behavior on a given platform. As with all research, any analytical limitations and considerations should be placed alongside findings to ensure research findings are not inappropriately used.

The use of social media research provides a number of advantages relative to other research methods, namely:

- A) *Opportunity to collect and analyse data in real-time.*
- B) *Opportunity to collect a wide diversity of messages/information (e.g., from more spontaneous to more thoughtful reactions) produced by a heterogeneous group of people.*
- C) *Opportunity to collect data corresponding to different moments in time, very quickly (either longitudinally or by selecting different collection points in time).*
- D) *Online data/conversations seem to yield a higher level of honesty and transparency.*
- E) *Allow access to a large sample of people, from different geographical areas, with relatively little practical restraints.*
- F) *No need for data transcription.*

IV. HAZARDOUS EFFECT OF USING SOCIAL MEDIA

Web Users of social media are not representative of populations, as such, biases will exist and it may be difficult to infer findings to the general population. However, this characteristic may be helpful if the research is focused on a group that is particularly active on a social media platform, and there is the potential to obtain data on groups who do not tend to respond to other research methods. Platforms can host numerous automated 'bots', and professionally managed accounts which pose as genuine human users. Large studies should therefore attempt to filter out results from such anomalous sources during analysis. 'Organic' real-time data: Social media data is seldom created for research purposes. Whilst this means large amounts of data may be irrelevant or in a format that is difficult to analyze, it has the advantage of removing researcher bias, recall issues and participant burden. However, social media users are still engaged in performative social interactions which will produce observer effects.

At the individual level, this can relate to reputation concerns, whilst users with shared interests may collectively promote material. If a researcher was to make their presence on social media known they should be aware of the potential changes to behaviour that could occur. Online behaviour versus offline behaviour: As a performative action, it is difficult to infer how reflective a user's online behaviour is of their offline behaviour without information on them from other sources. It is generally held that both positive and negative online feelings are over-stated and that interest in a topic may actually not translate into further actions (the value-action gap). This is partly due to the 'echo effect' that is produced as a social media platform skews the content viewed by 15 users according to their preferences, thus limiting their exposure to alternative viewpoints and encouraging group-think. Further in-depth studies of samples of users could provide insight in this area. Private ownership of platforms and data: Access to data is governed by companies that own the data and their privacy agreements with users. Many companies do not share a wide range of details about the social media interactions which occur on their platforms. Therefore, whilst interactions can be observed and analyzed, important nuances or context may be missing.² In addition, there is opacity as to how datasets have been created. Platforms change functionality, settings and popularity regularly, which affect the way data is collected and analyzed. Whilst there are frequently positive developments in the opportunities available with datasets (e.g. new variables), ensuring consistency in research across longer timeframes can be problematic.

Institutional review boards often balk at studies that seek to analyze people's behavior on social media websites because it's ethically unclear whether Facebook, Twitter or other types of postings count as public or private behavior, and therefore require their authors' consent to be used in research. "Technically, the information that you post on Facebook is publicly available," says Emily Christofides, a social psychology PhD candidate at the University of Guelph in Ontario, Canada.^[15] But many people think of posts as

private, and institutional review boards tend to back them up, she says. To avoid this problem, many psychologists obtain explicit permission from social media members they'd like to use in their studies.

Even with participants' permission, however, you can still run into trouble if you gather data from their friends and networks people who have not given permission to be studied, says Nicole Ellison, PhD, a Michigan State University associate professor of telecommunication, information studies and media. A commonly overlooked privacy problem is researchers' use of their own accounts — and associated friends' — to collect data that participants believe is limited to their "friends" network, she says. Ellison says that researchers can avoid this problem by only examining publicly available profiles that have no connections to their own. The safest way to make sure you're not unintentionally accessing privileged information is to use an account that has no friends or other connections, she says. Different social networking sites and groups may also have different rules about soliciting research participants. For example, APA doesn't allow researchers to recruit study participants from its groups on Facebook, Twitter, LinkedIn and elsewhere. The practicality of collecting social media data can pose problems for researchers. Facebook's terms of service, for example, won't allow automated data collection, Ellison says. "You have to have some level of technical sophistication, so it's a little different than survey data," Ellison says. In her research into perceptions of social capital, her group has worked with Bernie Hogan, PhD, a sociologist at the Oxford Internet Institute, to download and analyze social networks from Facebook. Their tool accesses only data that Facebook provides to any application, such as Farmville, and creates summary statistics for each respondent. It is these summary statistics, and not the networks themselves, that are used in the analysis.

Other researchers have solved the accessibility problem by asking study participants to download summaries of their own data — which Facebook allows and then simply forward these summaries to the scientists. Other times, the easiest way is to create a page for the research project and then ask participants to "like" the page, allowing researchers access to their private information. A few groups are working on psychology-specific applications that can collect data in a more automated fashion, Gosling says. But social media sites debut new software without warning, causing these data-collection programs to stop working overnight, he warns. Sites may change how users' profiles are linked to one another or how profile information is organized, and privacy settings are frequently altered.

"A study of Facebook a year ago is no longer relevant to what Facebook can do now," he says. "Researchers need to be aware that, without warning, their research can be derailed. Repeated messages (same message posted more than once by the same person or other people, such as retweets and shares, for example) can over represent the sample of messages and lead to biased interpretations, depending on the research goal. Social media quantitative analysis does not completely draw on the richness of consumers' responses and, thus, they

provide only a superficial analysis. Deeper and richer qualitative analysis can represent a very time consuming task, given the size and the unstructured nature of the data. Deeper and richer qualitative analysis may require investing in specific software programs, Loss of paralinguistic phenomena. Non-verbal communication plays a significant role in conveying meaning and emotion and its loss can affect the interpretation of messages. In accordance, although the analysis of some forms of written expression of emotions (e.g., emoticons) can give some insight in this regard, they still provide an incomplete view of the phenomena. Generalization to the broader population is constrained, unless complemented with additional methods/data analysis procedures (e.g., Epidemiological studies). Samples might be biased by excluding people that do not use social media or internet regularly and/or that are illiterate. Samples might be biased by including the people that are more interested in the event or issue studied (self-selection). The access to data is only possible for information that the user shares as public or provided an informed consent is given.

V. MEASURES TO CURB THE DANGER

Social networking site has great impact on the youth and it has lots of challenges which they have to face due to excessive use of social media. Many questions arise in our mind when we think about the impact of these social networking sites on research. What does it mean to manage online privacy in an ethical manner? How do online spaces facilitate and undermine ethical thinking about privacy? How much personal information is reasonable to share online? Young people who share personal experiences online taking steps to protect their own and others' identities, and are these steps sufficient? Is it reasonable for researchers to expect a certain measure of privacy when it comes to their online lives? Who is at fault when an unintended audience can read a young person's revealing blog or Myspace page? So we should focus on the ethical use of these social networking sites so that it serves our society in a right way and the youth can play an important role because social networking sites is not only advantageous in research but also it has drastic consequences." On one hand it provides an opportunity to connect with academicians, professors and share our research where as on the other hand, a researcher is always in fear of getting his or her ideas stolen by other researchers." [16]

VI. CONCLUSION

Technological "Therefore it can be concluded that social media is indeed beneficial for the researchers and academicians which has proved to be boon in disguise." [17] The researchers can easily access their data and at the same time face dangers of using social media to publicizes their research. Similarly academicians can also be benefitted through social media but at the same time they are in a perilous situation. In order to curb such incidents, the researchers need to be very careful and always of the watch and if such things happen, they can take the help of cyber court.

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