Social media user's information security and privacy .

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Abstract

Social media is a blessing of modern life which has changed the life of its users. People use social media mostly for the sake of entertainment, sharing information, news and education. Users while using social media did not care about their information security they have provided to social media. Social media also provide the information security and privacy in such a pathetic way that an ordinary user cannot easily understand and implement it. We have tried to evaluate the user performance about social media information security and privacy in this survey based case study. According to our evaluation there is need of social media user's education about the available settings of information security and simple availability of security and privacy settings. After the two possible solution of social media user's information security we are proposing the monitoring and interactive tools for evaluating existing information security for updating immediately.

Keywords

Social media site , artificial intelligence , machine learning , Web 2.0

Introduction

Social media are Web 2.0 internet based applications. The content on social media is user-generated-content (UGC) and is called the lifeblood of the social media organism. Social media users create service specific profiles for the site or any other application that are designed and maintained by the social media organizations. Using social media users creates social networks by connecting user profiles with other individuals or social groups to form the virtual communities. Many forms of social media technologies are available like blogs, forums, enterprise social networks, social gaming, video sharing and virtual worlds. Social media are computer medicated tools that permit people or companies to build, share, or switch information, career interests, thoughts, and pictures, videos in effective communities and networks[2, 19]. Social Media is the future of communication. Social networks such as Facebook, LinkedIn, and Twitter have become very important [3]. They help out us attach with friends and family; find jobs, share experiences, promote own interests and business offerings [4]. Utilizing online networking we have moment access to a great many people groups and we have better approach for connection [12]
. The purpose of these kinds of sites is to facilitate business community to develop their business. We can upgrade and create complete company page on these sites [13]. Online shopping is also done by these sites. Social media is contributing the important part in education by using the sites like Skype, YouTube, video call we teach the peoples which are so far from classroom [14]. Government and businesses around the world now recognize the power and benefits of social networks for mass communications, news distribution, as well as promotion of products and services We can use social media in disasters and emergences we can take help in emergences while using social media. By seeing the posts of people we can send the help in these areas. However, when collective with social engineering efforts, they also have a shady side and pose a great risk to organizations in today's organized world. Criminals can use social media for frauds, stealing sensitive information, gathering business secrets.

Cyber-attacks are also the big risk for social media [1, 5, 10]. The main cyber-attacks together with Spear Phishing, web application attacks. Spear phishing is an email that is from an individual or business that you know. But it isn't. It's from the same criminal hackers who want your credit card and bank report information, passwords, and the financial report on your PC.

Mankind has come to a phase where they can't live without social media sites and with the abruptly increasing need for using these sites, users must feel secure and comfortable using these sites but unfortunately Users of social media sites aren't safe or comfortable with the current privacy, due to many voids in the current privacy given in the social media to the users such as personal information leaking, and being annoyed by other users. From what we introduced we have come to the real question, how can people be secure and comfortable using social media sites?

2.1 Introduction

People are using social media mostly for the sake of entertainment by viewing others information and sharing their own views on social forums [6]. But most of them didn't have any idea about importance of privacy setting to secure their information from any cyber-attack by hackers. Users share a wealth of information about their personal and social aspects of life on social media platforms. Users snap perfectly posed selfless, check in at happy hours, tweet at our friends, and announce the arrival of bouncing new babies [20]. The benefits and joys of social media are numerous, but there are privacy risks to consider as well. Social media users tend to over share life details in order to feel connected to friends,

family, and coworkers. But these private details can be used maliciously by cyber thieves to access sensitive accounts, create fraudulent identities, and compromise careers [2, 3]. Some of the ransom activities can also be found in current roaming news conducted through different social media platforms on the cost of friendship and fellowship.

2.2 Main Body

We can divide our study in the following sections.

2.2.1 Social Media Security [7, 9, 15]:

The problem we are facing now days is privacy and security of information of social media users. The social media is available in many forms like web applications and smart phone apps. The users of social media use these all available applications at all available platforms. Due to this diverse availability of applications the security and privacy of information of social media users has more concerns. So using social media in a secure environment where the users fell comfortable and secure about their information is a very challenging task. Actually the social media applications providers have their focus on improving and introducing and increasing the existing features already available. But they have a little attention towards the security and privacy of their user's information.

2.2.2 Social Media Users Attention:

On the other hand the social media users have also no time about this critical issue which may be dangerous in feature as the information the social media user provide to the social applications are sensitive private and should be secure [8, 22]. Users are continuously using the social media

with no concern towards their information security and privacy. They are just enjoying the social media application features in their own customized way [23, 24].

2.2.3 Our Contribution:

We want to contribute in this problem in our own investigative way. In our survey we try to investigate the issue on its both sides i.e. about the security and privacy already available to the users and the lack of availability of privacy and security settings on social media. We want to found the facts about the issue and try to propose the solution about this which is optimistic, durable and applicable. According to us, the social media user involvement is very much important in order to reveal the truth about the issue. So we have to prepare a survey plan for this which will include a questionnaire containing the definitions of the problem from different angles so that we can estimate the problem level and according to that we will introduce some solution to the problem.

2.3 Problem Statement

Social media is a blessing in this world and is available to us in advanced form but there is still a big question on its security and privacy. The security and privacy issue is not only the fault of social media providers but it also concerns about usability of the users. Most of the users using social media have no idea about privacy settings available on social applications they are using.

2.4 Research Question

Mankind has come to a phase where they can't live without social media sites and with the abruptly increasing need for using these sites, users must feel secure and comfortable using these sites but unfortunately Users of social media sites aren't safe or comfortable with the current privacy, due to many voids in the current privacy given in the social media to the users such as personal information leaking, and being annoyed by other users. From what we introduced above we have come to the real question, How can people be secure and comfortable using social media sites?

2.4.1 Aims

In the light of problem statement and the question raised in previous section our aim to develop a research methodology so that we can at least cover some gap available in the area of social security of user's information. Here we are not developing any security technique to secure information, but using the existing security and privacy settings we can achieve our desired results somehow.

2.4.2 Objectives

Using the existing security features and privacy settings we want to improve security threats to the social media users. This can be achieved easily by simplifying the privacy settings, providing self-awareness and educating people towards their privacy concerns on social media. We also have some other options like, developing different training and monitoring tools which are intelligent enough to secure information just like a guardian.

2.5 Conclusion

We can conclude our discussion here in chapter 2 as social media is a blessing of modern age with countless benefits including education, awareness and entertainment but it has some security and privacy concerns as well. Till now we have a clear problem statement for our research focus, regarding user's information security on social media. We also observe that in the perspective of research problem we have many proposed models dealing with security and privacy of social media users.

3.1 Introduction

For social media user's information privacy and security problem we have adopted a survey based on a detailed questionnaire which is a composition of MCQ's and other general type questions like education level age etc. The questionnaire is adopted to measure the user performance on social media, their satisfaction level, feelings during social media usage and their general views about it.

3.2 Method

During this study we selected 50 students from University of Lahore, Pakistan dividing the participants on their gender (male, female), education level (graduation, post-graduation) etc.

This study was conducted through a series of steps, which are as follows:

The preparation of the questionnaire through which we tried to collect as much as possible of focused views on sensitive issues, which matter to the user mainly during usage of the social media sites performing any activity like posting or sharing photos etc.

We asked the participants for their gender, education level, age, social media account, and social media account type etc. We also try to know about their usage like their cover name on social media and their picture on social media is real or not. Participants were asked if they have any intentions to participate on privacy in social media sites, and the extent of their desire to share their opinion, and there was a good response from the participants. Our study is targeting two levels of students (Bachelor and Master) in University of Lahore to look for the strengths and weaknesses in the privacy of social networking sites. So this selection of students and their opinion for privacy and

security of social media will be a strong technical approach to this matter.

Looking for the problems faced by users of social media sites and whether current privacy offers its users a real privacy or suitable for the continuation of using the social media sites.

How do Participants deal with privacy settings and the extent of their trust and used to achieve the overall outlook privacy about the privacy of social media sites.

How can we mitigate ambiguity and confusion from privacy with the users of social media sites so that it becomes easy to access and adjust.

3.3 Pilot study

3.3.1 Analysis

We have performed a manual analysis on after filling of questionnaire by students. The collected information is extracted from questionnaire in order to get statistical results.

3.3 Main Study

The survey based research based on questionnaire gives an opportunity especially when we have research problem of social media as without interacting social media users we cannot get the right direction and results. Our motivation drives us towards the questionnaire, as the real issues faced by the social media users should be focused and fixed. The security and privacy of social media users is a main concern as the information is very sensitive and private to everyone. The facts founding activity based on survey based questionnaire helps us a lot towards the problem solution.

3.4 Conclusion

We can conclude our chapter 3 as we have now a survey based on questionnaire and analysis performed on limited amount of social media users. Our main study is social media user security and privacy and we have found a gap in this area which should be fixed. Users have limited amount of time, but they used social media for their own reasons with little interest in their information security.

4.1 Introduction

The results we have collected based on questionnaire are collected and analyzed in order to know the current situation of social media users about their information security and privacy. As the results collected by performing manual implementation of questionnaire based survey, so are limited in scope. But we can differentiate easily the problematic situations.

4.2 Results

In this section, we will give the results of each phase of the study showing these results in a consistent manner based on the questions. We have achieved the desired goals of these questions that we want to get them, to promote our ideas about privacy or to refute them or may possibly lead us to new conclusions.

Our focus is which are the most popular social media sites being used and what is the purpose of usage. We have found that 100% of participants are using one or more of the social media sites.

The most common social media sites used by participants are as follows (as the multiple choices were available to the participants of survey):

96% of the participants are using Facebook,34% are using Twitter, 24%are using linkdln, 6% are using MySpace and 24% are using other social media sites like

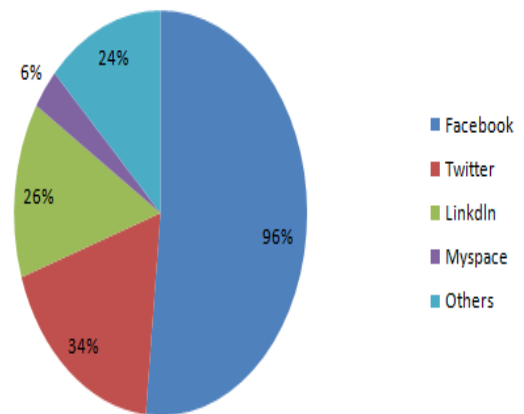Instagram and etc. Figure 1.1 summarizing theses stats graphically.

Fig 1.1 : Show usage of social media sites

We have asked the participants about the number of accounts they are using at any single social media site or application and we strangely got that 68% of them have more than one account. And only 32% have one account. This probably means the users don't find the privacy settings good enough so they tend to have another accounts with unreal personal information. Because of privacy and security issues the social media users have more than one account so that they want to differentiate the groups like family, relatives and friends.

Only 12% of the participants are using fake names at their accounts, this result supports the above analysis about users don't think privacy is good enough while 88% are using their real names.

Users have attachment to their social media applications as 50% of them replied that they visit their accounts more than once per day, while 36% said once per day,10% said to visit several times a week and only 4% answered with very rarely but they have accounts.

58% of participants are using social media sites to communicate with friends and

family, 68% for sharing exchanging ideas and knowledge, 36% for education, 14% for shopping and other14% are using for information etc. (as multiple choices were allowed).

Participants' knowledge of the privacy settings (obstacles) :

As here in our study we are talking about the social media users information security and privacy, our survey reveals some shocking results which are as follows:

66% of the social media users have read the privacy terms and conditions when they have created their accounts and the others 44% didn't. This is because of the fact that people don't like to read lengthy paragraphs and terms and conditions, but they soon suffer the consequences of ignoring terms and conditions and policy of the site.

While sharing something on social media sites28% of users share content with public privacy, 60% with friends only, 8% for friends of friends and only 4% share the content privately.

44% of the users regret something they posted or shared with others and this causes users to create accounts with fake names but 56% of users share content frequently.

Difficulty and Satisfaction Level:

52% of the social media users replied that the privacy settings available for using social media are not enough for their privacy while 48% are satisfied. As we are claiming that the users believe that privacy settings are not good enough and they don't feel secure about their privacy.

8% of the participants think that privacy settings are very difficult, 46% think these are difficult,42% said it's easy and 4% they don't know even about these settings. This also emphasizes the recommendation we

suggested before that social media sites providers should improve a better environment and place for users to practice their digital life freely.
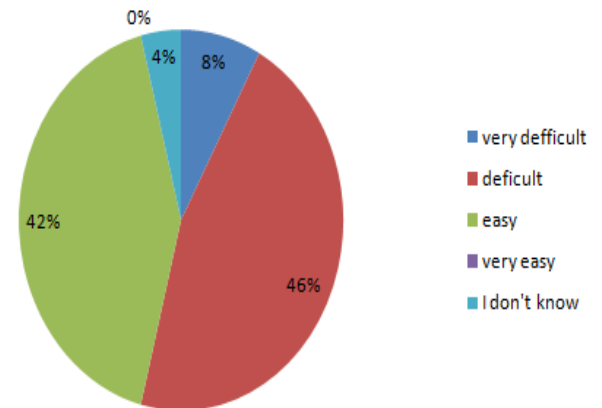

Fig 1.2 : show the opanion of user's about privacy setting

16% of the users replied that they have read their privacy settings just in the last week, 28% read in last month, 32% read last year and 24% read the terms at the time of account creation. This can be concluded as is no educational awareness about importance of privacy settings of information. Figure 1.3 summarizing the previous statement.
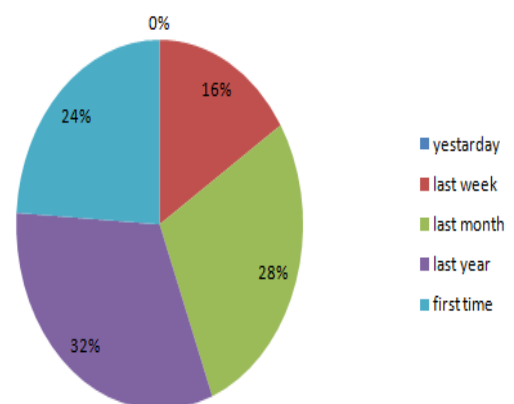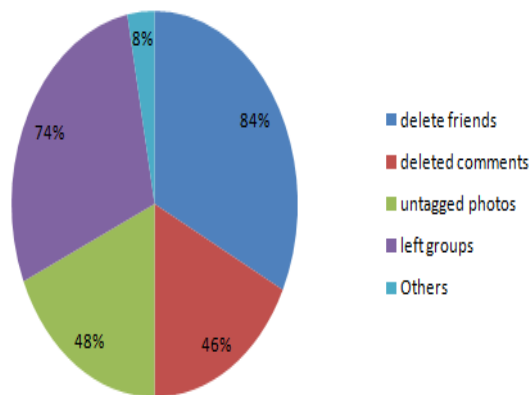

Fig 1.3 : show how much users readjuest their privacy setting

84%had to delete friends from friend list while using social media due to privacy issues, 46% had deleted comments, 48% untagged photos, 74% left groups and 8% were forced to do other actions like blocking and send reported. The following figure is depicting the results.

4.4 Analysis

As we have survey results described in the previous section of the report which is backing our hypothesis about the privacy and security of social media users. The results and the figures depicting the stats are analyzed manually. We have calculated percentages against each question among the available choices in the questionnaire. After that we entered the results in excel sheet for better understanding. We have found in results that most of the social media users did not know and even they are not willing to know the depth of the issue.

4.5 Conclusion

We can conclude chapter 4 by mining and summarizing the results available to us as: The stats indicates that privacy settings are available in such a confusing way so that

the users did not even interested in it. User can not want to read and navigate through the lengthy literature of terms and conditions. Users found the settings are hard to implement. Privacy settings should be available in such a simple efficient and attractive way so that the user can easily go through in a very little time. Also the user must have to perform privacy and security settings in order to use any social media at the time of account creation.

5.1 Introduction

After collecting and summarizing the results we are ready to discuss the available figures about the current situation of social media security and privacy. We will discuss in this chapter about the problem and solution combination so that by evaluating the level of the problem we have to deal and propose some better solution with different available solutions. Privacy and security settings are available but these are not in a usable form. So there is a need of using the existing privacy features and addressing the problems in the existing features. As we can observe that by using the existing privacy and security features most part of the problem is fixed and the rest of the concern can also be addressed easily by improving the settings, introducing the monitoring and guidance tools, attaching some intelligent agents with social media sites in order to report the viral attacks.

5.2 Discussion with reference to RQ

We have measured user performance and dealing with social media settings about privacy and security. During this case study we have noticed that many of the participants did not know about the privacy policy of the social media they are using.

Social media users create account; use it frequently in a day with having no concerns about their information security. On the other side we the available security and privacy settings are too hard to implement that even an educated user is not comfortable with it.

As, our study has highly educated participants but results revealed that there is no satisfaction exists among social media users about the current social media sites privacy policy. Some replied that it's too difficult, some says it is not enough for the privacy that they exactly need. This situation encourage us to make this study wide to include the users with low level education and teenagers to figure out how much they suffer from the difficulties of the privacy settings. Because of the fact that we know that teen agers are the most active users in posting or sharing their personal information on social media sites [1]. The is a strong need to use social media sites in many aspects of life but with better privacy environment which give more suitable and dependable privacy policy. The users cannot create account with fake names or nicknames because of the lack of privacy policy. Most of the users have careless attitude while using social media as they are just using and being entertained frequently.

5.3 Future Work

As per this study we are at its initial phase of journey. Taking the initiative about the social media privacy and security we are now confident enough about the ultimate solution of this irritating issue. In this case study we have our focus on awareness and education of social media users, but in the next phase we are going to evaluate the existing monitoring tools about the social media and propose the new one with

innovative features according to the current problems. The proposed tools are like extensions to the existing social media applications which are enriched with artificial intelligence and machine learning techniques [16, 17, and 18]. The monitoring extensions should be flexible scalable and applicable to existing and new social media policies.

5.4 Conclusion

In this paper we have investigated the participants' knowledge about the privacy policy and how to avoid this problem by enhancing the self-awareness of users about the importance of privacy policy to get more secure and private environment skipping the unfortunate experiences due to the illogical and illiterate method of using. We discussed in this paper the level of satisfaction of users towards the current policy and their hopes about better future privacy settings .Finally we can say that to avoid the previous issues we have to work on different aspects, education through all educational levels starting from primary schools, the companies and firms training their employees regarding this matter, and the duty of the social media providers to improve the privacy policy by making it usable and simple for different groups of people using the social media sites. Also we introduced some ideas to entitle the providers of social media to work on better secure simple and comfortable privacy policy and that makes the user's digital life more private and suitable.

5.5 References

[1] He, Wu. "A review of social media security risks and mitigation techniques",*Journal of Systems and Information Technology* 14, no. 2, 171-180, 2012.
[2] Tayouri, David. "The Human Factor in the Social Media Security–Combining Education and Technology to Reduce Social Engineering Risks and

Damages", *Procedia Manufacturing* 3, 1096-1100, 2015.

[3] Manca, Stefania, and Maria Ranieri. "Facebook and the others.Potentials and obstacles of Social Media for teaching in higher education." *Computers & Education* 95, 216-230, 2016.

[4] Sobaih, Abu Elnasr E., Mohamed A. Moustafa, ParvisGhandforoush, and Mahmood Khan. "To use or not to use?Social media in higher education in developing countries." *Computers in Human Behavior* 58, 296-305, 2016.

[5] Raja-Yusof, Raja-Jamilah, Azah-Anir Norman, Siti-Soraya Abdul-Rahman, and ZulkifliMohd-Yusoff. "Cyber-volunteering: Social media affordances in fulfilling NGO social missions." *Computers in Human Behavior* 57, 388-397, 2016.

[6] P.B. Brandtzaeg, J. Heim, "Why People Use Social Media Sites", Lecture Notes in Computer Science Volume 5621, pp. 143-152, 2009.

[7] C. Rose, "The Security Implications Of Ubiquitous Social Media", International Journal of Management & Information Systems – First Quarter, Volume 15, Number 1, 2011.

[8] F. Groeneveld, B. Borsboom, B. van Amstel, "Over-sharing and Location Awareness", Center for Democracy & Technology, February, www.cdt.org/blogs/cdt/over-sharing-and-location-awareness, 2010.

[9] Wu He, "A review of social media security risks and mitigation techniques", Journal of Systems and Information Technology, Vol. 14 No. 2, pp. 171-180, 2012.

[10] M. Jakobsson, S. Myers, Phishing and Countermeasures,"Understanding the Increasing Problem of Electronic Identity Theft", Wiley, Hoboken, NJ, 2006.

[11] S. Granger, "Social Engineering Fundamentals", Part II: Combat Strategies, www.securityfocus.com/infocus/1533, 2002.

[12] S. Abraham and I. Chengalur-Smith, "An overview of social engineering malware: trends, tactics, and implications", Technology in Society, Vol. 32 No. 3, pp. 183-96, 2010.

[13] M. Huber, S. Kowalskiy, M. Nohlbergz, and S. Tjoa, "Towards automating social engineering using social networking sites", Proceedings of International Conference on Computational Science and Engineering, 2009.

[14] B.D. Cone, C.E. Irvine, M.F. Thompson, T.D. Nguyen, A Video Game for Cyber Security Training and Awareness, Computers & Security26, pp. 63-72, Elsevier, 2007.

[15] R.C. Dodge Jr., C. Carver, A.J. Ferguson, Phishing for user security awareness, Computers & Security 26, pp. 73–80, Elsevier, 2007.

[16] L. Zeltser, Monitoring social media for security references to your organization, isc.sans.edu/diary.html?storyid=10921, 2011.

[17] D. Gritzalis, Holistic Information Security: Human Factor and Behavior Prediction using Social Media,www.infosec.aueb.gr/Publications/Security Project 2014.pdf, January 2014.

[18] O. Brdiczka, J. Liu, B. Price, J. Shen, A. Patil, R. Chow, E. Bart, N. Ducheneaut, Proactive Insider Threat Detection through Graph Learning and Psychological Context, Palo Alto Research Center, 2012.

[19]Chun, A., & Reyes, L. F. L, "Social media in government", Government InformationQuarterly, 29, 441–445, 2012.

[20]Chung, I. J,"Social amplification of risk in the internet environment", Risk Analysis,31(12), 1883–1896, 2011.

[21] Junco, R,"Engaging students though social media", Evidence-based practices for use in student affairs. San Francisco, CA: Jossey-Bass, 2014.

[22]Kaplan, A. M., &Haenlein, M,"Users of the world, unite! the challenges and opportunities of social media", Business Horizons, 53(1), 59e68, 2010.

[23]Karvounidis, T., Chimos, K., Bersimis, S., &Douligeris, C,"Evaluating Web 2.0 technologies in higher education using students' perceptions and performance", Journal of Computer Assisted Learning, 30(6), 577e596, 2014.

[24] Bowen, S. A., & Stacks, D. W.,"Understanding the ethical and research implications of social media", In M. W. DiStaso, & D. S. Bortree (Eds.), Ethicalpractice of social media in public relations (pp. 217–234). New York, NY: Routledge, 2014.