Impacts of Dark Side of Online Social Networks (OSNs) on Users: an Agenda for Future Research

Research-in-Progress

Layla Boroon
University of Technology Sydney
81 Broadway, Ultimo NSW 2007,
Australia
Layla,boroon-1@student.uts.edu.au

Babak Abedin
University of Technology Sydney
81 Broadway, Ultimo NSW 2007,
Australia
babak.abedin@uts.edu.au

Seyedezahra Shadi Erfani
University of Technology Sydney
81 Broadway, Ultimo NSW 2007, Australia
shadi.erfani@uts.edu.au

Abstract

The use of online social networks (OSNs) has grown substantially over the past few years and many studies have reported positive effects of using OSNs platforms. However, the negative effects of OSNs have received little attention. Given the lack of studies in this area, we conducted a review of top information systems journals to explore the gaps in the literature. Our review identified a number of theoretical and practical gaps. We then recommended an agenda for the future research, highlighting the importance of the dark side of OSNs and guiding researchers on how they can identify, mitigate and reduce negative consequences of using OSNs on different aspects of human lives.

Keywords: online social networks, negative effects, risks, dark side

Introduction

Online Social Networks (OSNs) are social systems that facilitate online communications among a very large number of individuals (Barbagallo et al. 2008). Erfani and Abedin (2018) argue that the OSNs cause both positive and negative socio-psychological effects on their users, and that identifying the effects of OSNs use is very important. Most of the past studies on the effects of OSNs use have focused on the positive consequences of OSN use, leaving the negative effects of OSNs use with little attention in the current literature.

Exploring risks and negative aspects of OSNs use is essential, as 2.7 billion of the world's population are OSNs users and it will increase to 3.02 billion by 2021 (Statista 2018b) and their life and wellbeing may be threatened by controversies, risks and adverse consequences resulted from using OSNs (Mäntymäki and Islam 2016). Research shows that using OSNs can lead users to experience risks and adverse consequences such as social pressure and distraction addiction (Fox and Moreland 2015), stress (Dredge et al. 2014a; Fox and Moreland 2015), feelings of jealousy (Fox and Moreland 2015; Sánchez et al. 2015), irritation, depression and panic (Yan et al. 2016), privacy risks (Liu et al. 2016), harassment , aggressiveness and intentional acts (Dredge et al. 2014b), low academic performance (Paul et al. 2012; Turel and Qahri-Saremi 2016), and low job performance (Lu et al. 2015).

Despite the above findings, no prior study has yet offered a comprehensive perspective on various negative effects or a conceptual framework of the dark side of OSNs use (Berger et al. 2014). OSNs can negatively influence all aspects of human life such as, mental/physical heath, financial situation, time, energy (Yan et al. 2016), privacy (Fox and Moreland 2015) and security (Jiang et al. 2013). Thus, increasingly major information systems conferences, journals, and other outlets are calling for more research into the dark side of using OSNs in particular and social media in general (ECIS 2018; Emerald 2017; PACIS 2017; PACIS 2018).

Thus, in this paper, we aim to review prior studies on the negative effects and the dark side of using OSNs to identify major and important gaps. Accordingly, the objective of this study is to propose an agenda for future research and uncover theoretical and practical gaps. This research in progress, which is a part of a bigger study, seeks to answer what theoretical and practical gaps are in the area of negative effects of OSNs use, and why would addressing such gaps be important for Information Systems researchers.

This paper is organised as follows: in the second section, we present a research background; the third section explains the extracted gaps from the reviewed literature; the forth section provides an agenda for addressing the identified gaps; then, we present a discussion of the findings in fifth section; and finally, the sixth section closes this paper with a conclusions.

Research Background

Online Social Networks (OSNs) in the Information Systems Literature

Throughout the past few years, a new class of information networks called OSNs has emerged and grown (Berger et al. 2014). According to Barbagallo et al. (2008), OSNs are social systems that allow a very large number of individuals or groups to have an online relationship with one another. Cao et al. (2015) discussed different categories of OSNs applications such as, blogs, instant messaging, podcasts, social networking websites (e.g. Renren and Wechat in China, Vkontakte in Russia, Facebook), professional networking websites (e.g. LinkedIn), microblogging (e.g. Twitter, Weibo in China), and virtual worlds (e.g. Second Life). Therefore, an OSN is a virtual space that allows its users to generate, share, transfer, and exchange different types of information such as text, video, voice, and picture (Chaffey et al. 2009). All of the above types of OSNs applications provide different features to their users such as 'tag', 'post', 'dig', 'blog' (Xiang et al. 2009), 'like', 'follow' and 'friend request' on the Internet. The pervasive nature of OSNs, their unique features to support users to establish connections, develop interactions with their connections, and share content and consume content provided by their networks makes them an attractive tool for people (Erfani et al. 2013).

History of OSNs

The initial year of OSNs is from 1997 to 2000 (Ellison 2007). Throughout these years, different OSNs platforms such as SixDegrees.com, AIM, ICQ buddy, LiveJournal, Cyworld, LunarStorm, Ryze.com, and Friendster were developed but none of them succeeded due to the lack of attractiveness or poor service provision (Ellison 2007). The maturity and popularity of social network sites was began from 2003 (Ellison 2007) and has being dramatically continued so far (Statista 2018b). According to Ellison (2007) From 2003 to now, lots of OSNs such as MySpace, Facebook, YouTube, Orkut, Mixi, Grono, Chinese QQ, LinkedIn, and Skype were created. Among the above platforms, Facebook is the most popular platform, because more than 2 billion out of 2.7 billion of OSNs' users are Facebook users (Statista 2018c). Since OSNs have become an important part of many people's lives (Ellison and Boyd 2013), and many users spend hours using OSNs each week or even each day (Junglas et al. 2013); naturally, such extensive use of a social tool has positive and negative implications on people's lives (Mäntymäki and Islam 2016).

Positive Effects of Using OSNs
Using OSNs can have many positive effects on different aspects of human lives such as health, customer relationship management and disaster management (Erfani and Abedin 2016; Erfani et al. 2017; Poblet et al. 2017). There are many studies in the field of the positive effects of using OSNs (Berger et al.

2014). For example, the effect of social network site use on the psychological well-being of cancer patients was explored by Erfani et al. (2017). The latter concluded that use of Ovarian Cancer Australia Facebook i) enhances social support, ii) increases the experience of social connectedness, iii) develops social presence and learning, and iv) finally improves the psychological well-being of cancer patients. Moreover, Abedin (2016) state that using OSNs platforms by organisations can lead to i) increasing popularity of social networking sites among customers as a market pressure, ii) establishing a direct and closer customer relationship and iii) brand promotion. Furthermore, OSNs have been increasingly used by government organizations for communication with citizens to enhance a community's capacity for minimizing the negative effects of disasters on damaged areas (Abedin and Babar 2017).

Negative Effects of Using OSNs

OSNs use and adoption is increasingly growing, and on the other hand the use of OSNs could result in socio-psychologically negative effects on different aspect of users' lives (Erfani and Abedin 2018; Mäntymäki and Islam 2016). For example, Campisi et al. (2012) found that students' emotional and physical health is negatively influenced by using Facebook. The latter also shows that negative feelings such as anger or sadness can be caused by online interactions. In addition, study conducted by Campisi et al. (2012) found Facebook over use can significantly increase negative feelings. Some studies concluded that privacy, protection of data, is a concern in online social interactions and this can increase potential risks of harassment such as stalking and sexual abuse (Dredge et al. 2014a; Silic and Back 2016). Another adverse consequence of using OSNs refers to low academic performance. Some researchers argue that using OSNs have negative relationship with student performance (Paul et al. 2012; Turel and Qahri-Saremi 2016). Other studies show OSN use can lead to adverse consequences such as overload of social responsibility, social pressure, inappropriate expectations, distraction, addiction and dissatisfaction (Fox and Moreland 2015); cognitive and executional costs (Yan et al. 2016).

Dark Side of OSNs

According to a few studies that specifically concentrated on the dark side of using information technology or information systems, controversies, risks and adverse consequences surrounding OSNs have been considered as the dark side of these services (D'Arcy et al. 2014; Fox and Moreland 2015; Silic and Back 2016; Turel and Qahri-Saremi 2016). However, there is currently no holistic and consistent definition for the notion of the dark side of using OSNs. For instance, D'Arcy et al. (2014) identified five categories includes stress, work overload, interruptions, addiction, and misuse as the dark side of using OSNs. However, Fox and Moreland (2015) referred to inappropriate or annoying content, lack of privacy and control, social comparison and jealousy, relationship tension and conflict with others as the dark side of OSNs use.

Gaps in the Literature and a Research Agenda

This research reviewed 180 papers in the field of the negative effects and the dark side of using OSNs, consequently, two types of gaps theoretical and practical gaps have been detected. The theoretical gaps refers to areas for which theories fall short or there was lack of published theories for addressing the gaps on the dark side of using OSNs. The second group refers to some gaps between researches' outcomes and practitioners' performance.

Theoretical research gaps

- The first gap is a lack of study on negative effects of OSNs use in the literature (Berger et al. 2014; Cao et al. 2015). Mäntymäki and Islam (2016) assert that while using OSNs has brought many socio-psychological problems in human lives, more studies are still needed to further understand different risks or negative consequences of OSNs on users.
- Another gap in the current literature is a lack of a comprehensive and consistent definition for the term 'dark side' of OSNs use. While few studies (e.g. (D'Arcy et al. 2014; Fox and Moreland 2015; Garcia and Sikström 2014; Silic and Back 2016)) directly focused on the dark side of information technology or information systems on OSNs use, they just provided a general definition for the dark side which refers to negative effects, risks, adverse consequences, and negative users' experiences of using OSNs.

- The third gap refers to lack of a validated conceptual framework of the dark side of OSNs use, which indicates the relationship among internal components of the dark side of using OSNs. This conceptual framework could be very helpful for developing strategies to reduce risks of using OSNs.
- The fourth gap remark since there is not sufficient studies on the dark side of using OSNs (Berger et al. 2014; Cao et al. 2015), the lack of use of information systems theories is quite significant in proving the existence of negative effects of using OSNs.

Practical research gaps

- The inadequacy of user awareness about the risks of using OSNs. Recent studies indicate prevalence of users' negative experiences is associated with their lack of knowledge on what risks of using OSNs are and how those risks might happen (Fox and Moreland 2015; Silic and Back 2016).
- A lack of educational content for OSNs' users. Since there are not sufficient research on the dark side and the negative effects of using OSNs (Berger et al. 2014; Cao et al. 2015), there is not any educational content for users to train them how they can minimize the risks of using OSNs while they are using OSNs platforms.
- Next is a lack of relationship between finding of studies and designed policies for using OSNs tools (Preece 2004). Research findings can have an effective role in setting policies in order to control or mitigate any negative circumstances and to increase discipline (Trostle et al. 1999).
- The last practical gap refers to lack of effective ways to diagnose the risks of using OSNs that threaten users, but users are not aware of their existence. All identified the negative effects of OSNs use have been reported by users. However, application providers should be involved to detect some negative effects of using OSNs via developing some mechanism such as artificial intelligence, because most of the times, users can not realise what negative experiences might happen while they are using OSNs platforms.

Further to the above, future studies are needed to address the following emerging research problems and subjects: (i) *Developing and validating a comprehensive picture of various negative effects of OSNs use*: Research is needed to explore, categorize, and understand negative effects of using OSNs on users, because the notion of the 'dark side' of OSNs use is in its early stages and is still a very broad term that can comprise various types of adverse consequences of using OSNs (Fox and Moreland 2015; Silic and Back 2016); (ii) *Theoretical explanation of impacts of negative effects of OSNs on users*: Future research is needed for investigating how the dark side of using OSNs can be explained by information systems theories, and how and which theories can be applied for improving our understanding of adverse outcomes of OSNs use; (iii) *Studying on users who are living in developing countries*: while, two thirds of the internet users live in the developing countries (Group 2018; Statista 2018a), more than 72% of the reviewed studies were conducted on OSNs' users living in developed countries. Therefore, researchers should consider this region in their future research; (iv) *Studying on none-student and none-employee users*: All the reviewed studies surveyed people who mostly were students or employees. This means, they chose their target groups among people who were more accessible. However, there are different groups of people such as in retirement, non-student and the incapacitated that are OSNs' users and need more help to reduce their social issues, which are caused by OSNs use; (v) *Studying on OSNs platforms except Facebook*: around 60% of the reviewed papers focused on Facebook as the most popular platform. However, there are other popular platforms such as YouTube, Instagram, WhatsApp, Twitter, as well as country-specific applications in which the use of them is significantly increasing. Therefore, they need to be considered by researchers in future research and more studies are needed to elaborate and investigate negative experiences of their users. Findings may find variations in distributions of perceived negative effects across different platforms; (vi) *Exploring causes of the negative effects or the dark side of OSNs use*: Most of the reviewed studies just explored the negative effects or risks of using OSNs. However, finding the negative effects along with finding their causes can be equally important, because this situation leads researchers to find appropriate solutions faster and easier. Thus, future research can focus on the identified negative effects of OSNs use to detect their causes.

Discussion

This research identified important gaps and proposed an agenda for future research. This agenda guides future investigations on the dark side of using OSNs. Our proposed research agenda recommends research to develop conceptual frameworks for explaining the dark side of OSNs use for designing new strategies to identify, mitigate, and minimize the negative effects of using OSNs.

First: Developing a comprehensive picture of the negative effects of OSNs use

According to some studies, the term 'dark side of OSN use' is a broad concept that includes different types of controversies, negative effects, risks or adverse consequences of using OSNs (D'Arcy et al. 2014; Fox and Moreland 2015; Garcia and Sikström 2014). However, the latter did not clarify the types or categories of risks that would belong to the dark side of OSNs use. Therefore, researchers can create a collection of identified negative effects as the attribute values of the dark side of using OSNs by conducting a systematic literature review, which has not been performed so far.

Second: Categorizing the identified negative effects into different groups for representing the dark side of OSNs use for users

To define or represent a concept or a phenomenon, researchers need to uncover the characteristics of that concept based on its attribute values (Skowronek and McKinney 2010). Therefore, the characteristics of the dark side of using OSNs will be formed by categorizing the identified negative effects into different groups such privacy concerns, security threats or cyber bullying. These findings not only help researchers to understand what the dark side of OSNs use may entail, but also they can be important and efficient foundation for future research to further investigations on the dark side of OSNs.

Third: Proposing a validated framework of the dark side of OSNs

According to this literature review, until now, no conceptual framework has been proposed for the dark side of OSNs use. However, a conceptual framework is an abstract representations, connected to the research project's goal that direct the collection and analysis of data (Kitchel and Ball 2014). Therefore, a conceptual framework of the dark side of using OSNs would be a useful guideline to know what kinds of data are required and how to analyse them for achieving research's goals.

Fourth: Implications to theories

A proposed framework can lead to the extension of existing information system theories, which have been used to elaborate potential impacts of OSNs use. In the past, most of these theories have been used to explain positive implications of using OSNs. For example, some theories such as motivation theory, social capital theory, social networks, social support theory, belongingness theory, social presence theory, social cognitive theory and communication theory have been used in the literature to explore and explain positive effects of using social media or OSNs. A conceptual framework enables future studies to extent such theories above for exploring and explaining the negative consequences of using OSNs.

Increase users' awareness about risks and adverse outcomes of OSNs use

This can be achieved through notifying OSNs' users of the negative feelings or inappropriate circumstances that they may experience through what they are saying and how they are acting while they are using OSNs platforms (Tuunainen et al. 2009). Enhancing awareness can be resulted through helping OSNs' users to connect with one another verbally, nonverbally, and in the community. According to Fox and Moreland (2015), users may not anticipate risks or negative interactions, making them more vulnerable to the negative effects. In addition, recent findings indicate prevalence of users' negative experiences is associated with their lack of knowledge on what risks of using OSNs are and how those risks might happen. Therefore, to decrease the influence of negative consequences of using OSNs, researchers and the community of users should be informed and become familiar with potential problems (Fox and Moreland 2015; Silic and Back 2016). According to recent discussion in the Australian Broadcast Company (ABC) News website, since studies indicate that children's mental health is being endangered through social media use, parents need to be aware of problems that may threaten their children whenever their children become addicted to the use of any types of OSN platforms (Kagi 2018).

Educational content for users

A great way for users to learn about some issues or risks that might threaten them when they are using any kind of OSN platform is through informational digital guidelines. These guidelines should outline key information about the identified negative effects of OSNs use and put them into a piece of content that catches people's interest. Hence, two types of educational content are recommended: i) each application can provide users with information about risks or negative consequences threatening users while they are using that application, or ii) OSNs developers can create educational platforms with the content of what the negative effects of using OSNs are and how to control, prevent or mitigate them. In addition e-learning or digital training can be applied as a useful mechanism for individual training about how to mitigate the risk of using OSN (Silic and Back 2016).

Informing policy makers

Although OSNs have created several new opportunities for users, past findings show that using these platforms can increase the likelihood of new risks such as, cyber bullying, loss of privacy, loss of security, harmful contact for all users especially for children and young people (Livingstone and Brake 2010). It is even more important to study the negative effects of OSNs use on more vulnerable cohorts of users (Abedin et al., 2017), such as older people and children, for evidence-based policy making for reducing potential negative effects of OSNs use. For example, after reporting some problematic behavior of kids caused by using smartphone like iPhone app, France has moved to ban the use of smartphones in its primary and middle schools (Kawa 2018).

Informing application providers

Currently in the media, there are many conversations about negative effects of using social media or OSNs. As to the conversations or to the current practices in terms of addressing what can go wrong with spending time in social media use, some agencies' websites news have opened discussions and questions whether using social media or OSNs is good or bad. For instance, two major Apple shareholders push for study of iPhone addiction in children (Kawa 2018). These shareholders are concerned that qualities and attractive features of iPhone have caused a public health crisis in general and could hurt children in particular. This discussion not only is on social media, but also on mobile applications. Through this discussion, children's access to mobile applications needs to be controlled. Hence, a conceptual framework can help in understanding the existing risks of using technology and consequently OSNs applications' features need to be developed in order to control, mitigate and address the negative effects of social media use.

Conclusion

Information systems research is constantly evolving, which results in both potentials and challenges in researching, designing and using information systems. Given that, the objective of this paper was to explore the gaps in the literature about the dark side of OSNs use and propose an agenda for the future research, we found two major gaps. Firstly, the theoretical gaps refer to areas for which theories fall short or lack of published theories for addressing the gaps on the dark side of using OSNs. Secondly, practical gaps refer to the design of OSNs and areas for policymaking considerations. Accordingly, an agenda was proposed for future investigation in the field of the dark side of OSNs use.

This paper paves the way for future work on empirically investigating the negative effects of using social media in general and OSNs platforms in particular. This paper stresses the importance of understanding the negative effects of OSNs use and calls for future research, frameworks and guidelines for assessing how different groups of users, particularly vulnerable users, may be affected by OSNs and how these risks can be mitigated and users can be educated to more effectively protect themselves against potential harms.

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