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Exploring the Dark Side of Online Social Networks: A Taxonomy of Negative Effects on Users

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EXPLORING THE DARK SIDE OF ONLINE SOCIAL NETWORKS: A TAXONOMY OF NEGATIVE EFFECTS ON USERS

Research in Progress

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Abstract

The use of online social networks (OSNs) has grown substantially over the past few years and many studies have reported the benefits and positive effects of using these platforms. However, the negative effects of OSNs have received little attention. Given the lack of a comprehensive picture of the dark side of using OSNs, we conducted a systematic literature review of the top information systems journals to categorise negative effects and develop a taxonomy of the dark side of OSNs use. Our review of 20 papers identified 43 negative effects of OSNs use, which we grouped into six categories: cost of social exchange, annoying content, privacy concerns, security threats, cyber bullying and low performance that formed the holistic view of dark side of OSNs use. This paper discusses implications of the findings, identifies gaps in the literature and provides a roadmap for future research.

Keywords: online social networks, negative effects, adverse consequences, dark side.

1 Introduction

Online social networks (OSNs) are social systems that facilitate online communications among a very large number of individuals (Barbagallo et al., 2008). Scholars such as Mäntymäki and Islam (2016) and Erfani and Abedin (2018) argue that the OSNs cause both positive and negative socio-psychological effects on their users and 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 effects of OSNs use, leaving the negative effects of OSNs use with little attention in the current literature (Erfani and Abedin, 2018; Berger et al., 2014).

Exploring risks and negative aspects of OSNs use is essential, as 3.02 billion of the world's population are OSNs' users (Statista, 2017) and their life and wellbeing may be threatened by controversies, risks and adverse consequences resulted from using OSNs (Mäntymäki and Islam, 2016). Research shows using OSNs can lead to risks and adverse consequences such as inappropriate content, 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, Shiue et al., 2010), harassment and aggressive and intentional acts (Dredge et al., 2014b), low academic performance (Paul et al., 2012), low job performance (Lu et al., 2015), and security risks, reduced quality of life and reduced quality of work attitudes (D'Arcy et al., 2014). Despite these findings on particular risks of OSNs use, no prior study has offered a comprehensive perspective and taxonomy of various negative effects and risks of OSNs use (Berger et al., 2014).

While recently some studies refer to the term 'dark side of OSNs use' as controversies, risks and adverse consequences surrounding using of OSNs (D'Arcy et al. 2014), little has still been offered in the extant literature about what this term may mean and entail. For example, Fox & Moreland (2015) claim that narratives surrounding individuals' negative psychological and relational experiences can be tied to the dark side of social networking sites. Furthermore, Garcia and Sikström (2014) stated that the dark side of social network sites refers to drawbacks such as plagiarism, misrepresentation, time pressure, addiction and negative psychological consequences.

Thus, in this paper we aim to offer a definition of and perspective on the dark side of OSNs and propose a taxonomy of negative effects of OSNs use for guiding the future research on developing strategies for reducing the negative effects of OSNs use. This study, which is a part of a larger study, seeks to identify and provide a comprehensive taxonomy of the dark side of OSNs use, and demonstrate the negative effects of OSNs as characteristics of the dark side of OSNs use.

This paper is organised as follows: in section 2 we present a background and research objectives of the research; section 3 explains the methodology for conducting the systematic literature review and presents the findings; in section 4 we present a discussion of our findings and review the gaps in the literature; in section 5 we present our conclusions and recommendations for future research.

2 Research Background and Research Objectives

OSNs are virtual spaces that allow users to generate, share, transfer and exchange information such as text, video, audio and pictures (Abedin, 2016). Cao et al. (2015) identify different categories of OSNs applications including 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 websites (e.g. Twitter, Weibo in China) and virtual worlds (e.g. Second Life). These applications offer features to their users such as "tag", "post", "dig", "blog" (Xiang et al., 2009), "like", "follow" and "friend request". 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 (Shao, 2009, Van Dijck, 2009) makes them an attractive tool for people. OSNs have attracted billions of people and are continually expanding (Cao et al., 2015, Erfani et al., 2017). Since OSNs have become an important part of many people's lives, and many us-

ers spend hours using OSNs each week or even day (Erfani et al., 2017); naturally, such extensive use of a social tool has positive and negative implications on people's life (Mäntymäki and Islam, 2016).
As we stated earlier, many studies have only reported positive effects of OSNs use (Berger et al., 2014). For instance, Erfani et al (2017) and Erfani et al. (2016) show that experiencing social belongingness, obtaining social support and consequently experiencing better psychological wellbeing are the benefits of online healthcare community use. Another study illustrate that OSNs use has positive effects on friendship quality, bridging social capital and bonding social capital in early adolescents' social lives (Helmig et al., 2016). Furthermore, study conducted by Agnihotri et al. (2016) find OSNs use plays an important role in delivering information to the customers and enhancing salesperson behaviours and consequently increasing customer satisfaction.

In contrast, fewer contributions have discussed negative socio-psychologically experiences of OSNs use in people's life (Mäntymäki and Islam, 2016). For example, Campisi et al. (2012) find 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) find Facebook over use can significantly increase negative feelings. Jiang et al. (2013) have found 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. Other studies show OSNs use can lead to adverse consequences such as stress (D'Arcy et al., 2014, Fox and Moreland, 2015); overload of social responsibility, social pressure, inappropriate expectations, distraction, addiction and dissatisfaction (Fox and Moreland, 2015); cognitive and executional costs (Yan et al., 2016); deception (Tsikerdekis and Zeadally, 2014); and risk of misuse, security issues, reduced quality of life, and reduced quality of work attitudes and behaviours (D'Arcy et al., 2014). Accordingly, recent studies have called for more research contributions mainly deal with the dark side of OSNs use (Berger et al., 2014, Emerald, 2017, PACIS, 2017).

Given this background, the main objectives of the study in this paper are as follows:

- Objective 1: To explore and categorise negative effects of OSNs use
- Objective 2: To offer a definition of the dark side of OSNs use
- Objective 3: To propose a taxonomy of the dark side of using OSNs for guiding the future research on developing strategies for reducing the dark side of OSNs use.

Two questions have been formed to address the objectives above: (i) What does the term dark side mean in the context of OSNs use? And (ii) What are the characteristics of the dark side of OSNs use, in terms of types of negative effects of OSNs use on individual users? A systematic literature review was conducted to answer these research questions. Guides for next steps of research have been discussed later in the paper.

3 Research Methodology

This study is a systematic literature review using Bandara et al. (2011) and Wolfswinkel et al. (2013) guidelines. We conducted our review in five stages: define, search, select, analyse and present. This guideline contributes to a theoretical process and has adequate flexibility for a literature review. Furthermore, this guideline enables researchers to apply thematic content analysis to identify key themes in a single field of study.

3.1 Reference-selection criteria

To increase the efficiency and the performance of a systematic literature review, researchers need to define the criteria for inclusion or exclusion of identified articles (Wolfswinkel et al., 2013). A systematic review is a research strategy that specifies which terms and periods can be used during the paper identification process. Because the focus of this research was the dark sides of OSNs, two groups of keywords were developed to find relevant articles. Group 1 consisted of online social

network OR online social communities OR social media and group 2 consisted of negative impact OR negative effects OR negative consequences OR challenge OR dark side OR risk OR harm. All possible combinations of these two groups of keywords were used to search for relevant papers.

We limited our search to the period from 2004 to 2016 because the popularity of OSNs began to increase rapidly around 2004 (Berger et al., 2014, Cao et al., 2015). According to Cao et al. (2015), high-quality journals should be selected to develop a high-quality annotated bibliography. Thus, ten highly ranked journal were selected by adapted from two papers and Australian Council of Professors and Heads of Information Systems website (Berger et al., 2014, Cao et al., 2015, ACPHIS, 2017): *MIS Quarterly* (MISQ), *Information Systems Research* (ISR), *Journal of Management Information Systems* (JMIS), *European Journal of Information Systems* (EJIS), *Journal of the Association for Information Systems* (JAIS), *Journal of Information Technology* (JIT), *Communications of the AIS* (CAIS), *Communications of the ACM* (CACM), and *Information and Management* (I&M). Because most of the negative effects of using OSNs are socio-psychological problems, we included *Computers in Human Behaviour* (CHB) journal, because this journal is dedicated to examining the use of computers from a psychological perspective.

3.2 Approach to searching and selecting relevant papers

This study used four criteria to identify relevant and qualified papers:

- Papers published from 2004 to 2016.
- Papers published in MISQ, ISR, JMIS, JAIS, EJIS, JIT, CAIS, CACM, I&M and CHB.
- Papers in which the titles, keywords or abstracts included the keyword combinations (negative impact OR negative effects OR negative consequences OR challenge OR dark side OR risk or harm) AND (online social network OR online social communities OR social media).

By applying the above criteria, we identified 161 publications, most of which were excluded from our analysis as they were not related to this paper's questions and objectives. Consequently, based on our inclusion and exclusion criteria, 141 searched papers were excluded and 20 papers were selected as relevant studies. Figure 1 shows the distribution of the 20 selected articles by year of publication. As discussed later in this paper, a larger scale review is recommended in the future to complement this Figure beyond our selected 20 papers.

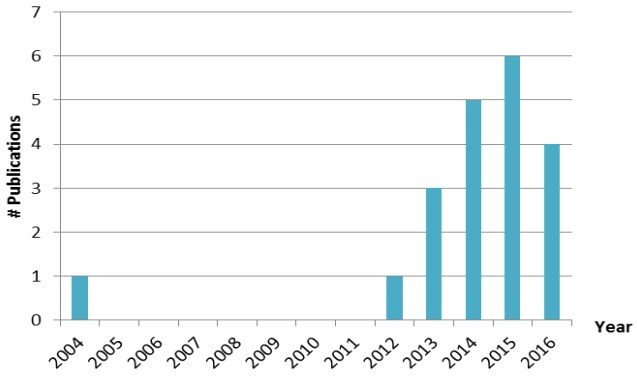

Figure 1. Distribution of the 20 selected articles by year of publication.

3.3 Demographic findings

Of the 20 selected papers, nine focused on the negative effects of Facebook use. This is not surprising because Facebook is currently the world's most popular OSN (Fox and Moreland, 2015). Of the remaining studies, five focused on other social platforms such as Sina-Weibo, Phoenix Health, Sweet Home, RenRen, QQ and a large telecommunications service provider's blog. Seven of the articles did not mention a specific platform; instead, they investigated the negative effects of OSNs in general. In

terms of geographic regions, the United States, Australia and China received the most attention from researchers, followed by European countries. Around one-third of the 20 studies did not mention any specific regions. There were more female participants than male participants in most of the studies, but none of the studies investigated the role of gender on the vulnerability of OSNs' users. All research participants were aged from 13 to 67 years old. Most of the participants had a good literacy and information technology background because they were mostly high school students, university students or full-time employees.

3.4 Coding and extraction of the dark side of OSNs use

Next, the coding process consisted of four steps: open/descriptive coding, pattern coding, axial coding and selective coding. Open coding is an analytical process that helps researchers capture concepts or variables from the selected articles (Wolfswinkel et al., 2013, Schubert and Williams, 2012). This method was used to understand what types of negative effects have been identified by the selected studies. We extracted 43 codes that reflect negative effects of OSNs use. After the open coding process, pattern coding and axial coding were performed to identify the subcategories and themes of the dark side of OSNs use.

Pattern coding organises the initial codes into subcategories, where each research finding is a concept or code and concepts of different studies can be categorised based on the similarities of their properties (Schubert and Williams, 2012, Wolfswinkel et al., 2013). Axial coding identifies interrelations among categories to uncover the underlying themes (Wolfswinkel et al., 2013). We examined backward and forward references of the selected studies for choosing appropriate and inclusive names for 'pattern' and 'axial' coding. We did this to name the extracted themes consistent with the relevant literature. Selective coding is the final process, during which the themes are integrated into a meaningful topic. The main goal of this stage is to develop a single phenomenon for a field of study, which in this study represents dark side of OSNs use. Table 1 summarises the output of these different steps.

<table>
<tr><th>Open/Descriptive & Structural Coding</th><th>Pattern Coding</th><th>Axial Coding</th><th>Selective Coding</th></tr>
<tr><td>Feeling panic</td><td rowspan="12">Intrinsic costs
(Tong et al., 2007)</td><td rowspan="18">Cost of social exchange
(Yan et al., 2016, Tong et al., 2007)</td><td rowspan="20">The dark side of OSNs use</td></tr>
<tr><td>Irritation</td></tr>
<tr><td>Feeling stress</td></tr>
<tr><td>Feeling depressed</td></tr>
<tr><td>Feeling guilt</td></tr>
<tr><td>Feeling jealousy</td></tr>
<tr><td>Feeling lonely</td></tr>
<tr><td>Self-dissatisfaction</td></tr>
<tr><td>Distraction addiction</td></tr>
<tr><td>Deterioration of mood</td></tr>
<tr><td>Being exposed to sexual images or messages</td></tr>
<tr><td>Reduced self-esteem/confidence</td></tr>
<tr><td>Addiction to the use of OSNs</td></tr>
<tr><td>Wasting time</td><td rowspan="6">Opportunity costs
(Tong et al., 2007)</td></tr>
<tr><td>Wasting energy</td></tr>
<tr><td>Wasting money</td></tr>
<tr><td>Work overload</td></tr>
<tr><td>Information overload</td></tr>
<tr><td>Increase user's appetite to take too much financial risk</td></tr>
<tr><td>Inappropriate posts</td><td rowspan="2">Inappropriate content
(Fox and Moreland, 2015, Preece, 2004)</td><td rowspan="4">Annoying content
(Preece, 2004)</td></tr>
<tr><td>Poor content (in terms of writing)</td></tr>
<tr><td>Dumb jokes</td><td rowspan="2">Obscene Content
(Preece, 2004)</td></tr>
<tr><td>Offensive content</td></tr>
</table>

Lack of privacy/privacy risk	Privacy concerns (Fox and Moreland, 2015, Jiang et al., 2013)	
Privacy violation		
Online safety		
Unsolicited communications		
Publicising private information		
Misrepresentation		
Deception	Security threats (D'Arcy et al., 2014, He, 2012)	
Misuse of information		
Impersonation		
Stealing personal data		
Cyberstalking behaviour		
Malicious software		
Phishing risks		
Feeling of being abused	Cyberbullying (Dredge et al., 2014a, Lim et al., 2013)	
Being harassed		
Conflict with others		
Incitement to suicide		
Delinquency		
Low academic performance	Low performance (Fox and Moreland, 2015, Lu et al., 2015)	
Low job performance		

Table 1. A proposed taxonomy of the negative effects of OSNs use

4 Discussion and Guide for Future Research

The overarching objective of this study was to synthesise the past research on the negative effects of OSNs use and provide a taxonomy and view of the dark side of OSNs use. Such an understanding is important because previous studies have highlighted the need for more research into how, given the rapid growth of these platforms, the use of OSNs may negatively affect users. We reviewed 20 papers from top information systems journals to explore and categorise the dark side of OSNs use into the following six high-level themes. Accordingly, the dark side of OSNs use is a multi-dimensional concept which reflects adverse consequences of using OSNs consisting of 'cost of social exchange', 'Annoying content', 'Privacy concerns', 'Security threats', 'Low performance', and 'Cyberbullying'.

- *Cost of social exchange* – According to social exchange theory, cost of social exchange are the negative consequences of exchanges of behaviours that affects behaviour frequency (Tong et al., 2007, Yan et al., 2016). Social exchange theory divides costs into two types: intrinsic costs and opportunity costs (Tong et al., 2007). Intrinsic costs are any psychological problems or pressures (such as pain, irritation, fatigue, unpleasantness and annoyance) and opportunity costs are time, energy, material and financial resources that people use when they engage in social activities (Tong et al., 2007, Yan et al., 2016). Our review found that cost of social exchange is the major dark side of using OSNs, and these can significantly damage users if they are not properly managed and controlled.
- *Annoying content* – OSNs' users send their texts, emails or messages without considering the rules of writing (Preece, 2004). These messages may have spelling mistakes and poor punctuation, or may be annoying because their content purposely or unwittingly disturbs other users (Preece, 2004). Jokes and offensive content are examples of messages that may have negative effects on OSNs' users.
- *Privacy concerns* – Privacy concerns refer to users' intellectual views of within the context of privacy such as commerce, online healthcare and marketing (Anderson and Agarwal, 2011). According to Fox and Moreland (2015), OSNs applications such as Facebook ultimately control users' privacy and limit their ability to hide some of their information from the world (Ellison, 2007). Users sometimes need to make an immediate decision to share their private information to respond to an online transactions (Jiang et al., 2013). Therefore, limitations in the time available to

make a rational decision can cause problems such as privacy violation or publicising private information (D'Arcy et al., 2014, Fox and Moreland, 2015).

- *Security threats* – OSNs adoptions are being threatened by security concerns because using OSNs can cause security incidents (He, 2012). These incidents can be loss of confidential data, misuse of information or impersonation (D'Arcy et al., 2014, Liu et al., 2016). According to He (2012), insufficient authentication controls, phishing and fake cross-site requests threaten the security of OSNs and can negatively affect users.
- *Low performance* – Some research suggests that the OSNs use helps employees to share information. But users involved in different kinds of online interactions can have their job performance affected (Fox and Moreland, 2015, Lu et al., 2015). There is a significant positive relationship between the amount of time wasted using OSNs and users' low academic performance (Fox and Moreland, 2015, Paul et al., 2012).
- *Cyberbullying* – Cyberbullying is an aggressive and intentional act carried out by an individual or group. Cyberbullies attempt to harm and imbalance the power of their victims by using electronic forms of contact (Dredge et al., 2014a). Cyberbullying negatively affects victims' emotional, behavioural, cognitive, social and physical wellbeing (Dredge et al., 2014a).

Additional research is needed to complement findings of this study and to further explore the dark side of OSNs use. Facebook was the platform of interest in half of the reviewed papers, and the rest of studies focused on specialised platforms, country-specific applications or did not mention any application. Thus, research is needed to focus on other platforms, especially mobile-based OSNs. This is important because users are increasingly using mobile devices to connect to, and interact with their network. In addition, almost all of the articles in our review focused on OSNs' users in developed countries, leaving developing countries under-researched. Another important area for further investigation is studying negative effects of OSNs use on more diverse groups of users. Our review showed that research has only considered users aged 13 to 67 years, ignoring younger users (12 or less) as well as older users (67 years or older). Future research should study these neglected age groups because they are more vulnerable because of their lack of digital and internet literacy or computer skills (Abedin et al., 2017). Moreover, the majority of the studies in our review recruited students or professional employees, and therefore the generalisability of their findings may be limited to these groups of users and leave people with disabilities, retirees, or people with other mental or physical problem under-represented. Future research is urged to investigate negative effects of OSNs use for these groups of users. More importantly, none of the selected papers in our review investigated gender differences in the negative effects of OSNs use. Future studies are needed to investigate whether the negative effects OSNs have differ by gender. Finally, given that this research is still in progress, we had to limit our search to only ten selected journals. The next step for this research is to expand the search and examine major databases and all relevant journals and conferences. Next, we also plan to conduct interviews to assess the validity of the identified negative effects and the corresponding themes.

5 Conclusion

According to Dutta and Mia (2010), information systems research is constantly evolving and this results in both potential and challenges in researching, designing and using information systems. Given that the objectives of this paper were to explore and understand the dark sides of OSNs use, 20 studies were collected and analysed, which led to uncovering 43 negative effects of OSNs use that resulted to developing a comprehensive taxonomy of the dark side of using OSNs. The coding process guided us to group these negative effects into six themes based on their similarity and underlying meanings. These themes were cost of social exchange, annoying content, privacy concerns, security threats, cyber bullying and low performance.

This paper paves the way for future work on empirically investigating the negative effects of OSNs in general and mobile based platforms in particular. Future empirical studies are needed to qualitatively

and quantitatively collect evidence from OSNs' users about their experience with the each of the negative effects in our proposed taxonomy. 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 educated to more effectively protect themselves against potential harms.

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