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Impact of privacy, trust and user activity on intentions to share Facebook photos

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Abstract

Purpose – The popularity of Facebook photo sharing has not only seen a surge in the number of photos shared but also has raised various issues concerning user privacy and self-disclosure. Recent literature has documented the increasing interest of the research community in understanding various privacy issues concerning self-disclosures on Facebook. However, little is known about how different privacy issues, trust and activity influence users' intentions to share photos on Facebook. To bridge this gap, a research model was developed and tested to better understand the impact of privacy concerns, privacy awareness and privacy-seeking on trust and actual photo sharing activity and subsequently on photo sharing intentions. This study aims to examine the consequences of various facets of privacy associated with photo sharing activity on Facebook.

Design/methodology/approach – A cross-sectional data from 378 respondents were collected and analysed using partial least squares modelling.

Findings – The results revealed a significant relationship between various aspects of privacy, including awareness and protective behaviour, with trust and activity. Furthermore, trust and users' photo sharing activity significantly impact photo sharing intentions on Facebook.

Originality/value – This study contributes new knowledge concerning various privacy issues and their impact on photo sharing activity and trust. The study also proposes implications that are highly relevant for social networking sites, media agencies and organisations involved in safeguarding the privacy of online users.

Keywords Facebook, Computer-mediated communication, Trust, Photo sharing, Privacy concerns, Privacy-seeking behaviour

Paper type Research paper

1. Introduction

Social networking sites (SNSs) have become an integral part of everyday activity for billions of internet users (Facebook Newsroom, 2015; Lenhart, 2015). People access SNSs for status updates, interaction with groups, searching and browsing user profiles, inviting contacts, private messaging, content browsing and sharing and commenting (Madden *et al.*, 2013a; Malik *et al.*, 2016; Smock *et al.*, 2011). The rise in SNS usage and acceptance has led to an overwhelming increase in the information revealed by SNS users (Stutzman *et al.*, 2013; Young and Quan-Haase, 2013). Extensive amounts of content shared on SNSs have raised users' concerns over the vulnerability of their personal SNS content to unintended exposure (Chang and Heo, 2014; Fogel and Nehmad, 2009; Orito *et al.*, 2014; Wilson *et al.*, 2014). Prior literature has indicated that the SNSs (including Facebook) collect and store users' personal information and browsing activity, as well as shared content, for an indefinite period of time



(Debatin *et al.*, 2009; Shin, 2010). These companies commonly use these rich data (e.g. photos, videos, user logs and user activities) for their own marketing purposes and business gains, as well as sharing it with third parties, including governmental agencies and business partners. Consequently, the users tend to lose control over their data once they are published on these networks (Acquisti and Gross, 2006; Chang and Heo, 2014; Debatin *et al.*, 2009). In addition to this, user concerns regarding information misuse and abuse, stolen personal data, cyber bullying, stalking and child safety also fuel the privacy concerns of the users (Chang and Heo, 2014; Krasnova *et al.*, 2009a; Raynes-Goldie, 2010).

Despite the fact that over recent years, concerns and awareness about privacy-related issues among SNS users have dramatically increased (Chang and Heo, 2014; Hoadley *et al.*, 2010; Stutzman *et al.*, 2013), most SNS users still seem unaware about the fate of their personal content on these platforms (Orito *et al.*, 2014). Furthermore, Facebook users continue to disclose information (such as photos) despite having concerns about privacy (Litt and Hargittai, 2014; Taddicken, 2014). As a result of increased privacy concerns and awareness among Facebook users, who are yet disclosing a lot of personal information, understanding the associated issues has become highly relevant for researchers and social networking practitioners.

Photo sharing is regarded as one of the leading activities on Facebook and is also considered an important form of disclosure on Facebook (Eftekhar *et al.*, 2014; Madden *et al.*, 2013a; Malik *et al.*, 2016). Facebook users have already contributed over 250 billion photos, and every day, they contribute 350 million photos on Facebook (Internet.org, 2013). Similarly, more than 1.8 billion photos are uploaded and shared every day on five leading SNS platforms (Meeker, 2014). Despite this extraordinary adoption and usage of digital photos on Facebook and other SNSs, a limited amount of research has explored privacy-related issues and attitudes in the context of photo sharing on Facebook (Cunningham *et al.*, 2010; Litt and Hargittai, 2014; Shin, 2010). Specifically, the impact of the users' privacy attitudes and perceptions on the users' trust, SNS activity and photo sharing intentions is largely unknown. Consequently, it is important to understand this relationship, as it helps in understanding how various privacy-related attitudes and perceptions shape the users' trust and activity level, which ultimately influences an individual's intention to share photos. To address this gap, the present study investigates the impact of privacy awareness, privacy-seeking behaviour and privacy concerns on shaping an individual's trust and activity level. Furthermore, we examine the mediating role of trust and activity levels on an individual's photo sharing intentions. The study aims to answer the following research questions:

- RQ1. How do users' privacy concerns, privacy awareness and privacy-seeking measures influence their trust in Facebook?
- RQ2. How do users' privacy concerns, privacy awareness and privacy-seeking measures influence their activity on Facebook?
- RQ3. How do users' levels of trust and activity influence their Facebook photo sharing?

2. Background literature

2.1 Social networking site disclosure and privacy

Self-disclosure can be defined as communicating personal information to other people (Derlega and Chaikin, 1977). On SNS platforms, self-disclosures can be carried out either

verbally (chat messages, commenting, location sharing or status updates) or through non-verbal means (sharing photos, videos, news or links). Users generally tend to disclose different forms and types of information to fulfil various gratifications. For instance, maintaining social relationships, seeking attention, feedback, bridging social capital and communications are some of the major gratifications that users seek by self-disclosing on SNS (Chang and Heo, 2014; Liu and Brown, 2014; Quan-Haase and Young, 2010). Facebook users also tend to disclose more information as they seek positive feedback and social capital (Liu and Brown, 2014). Disclosures that are motivated by relationship maintenance are usually positive and intentional (Tosun, 2012). In contrast, those users who are interested in maintaining offline relationships through Facebook self-disclose more for the sake of real-world ramifications (Hollenbaugh and Ferris, 2014). Furthermore, those Facebook users who seek entertainment and pastime gratifications also indulge in revealing more information through Facebook use (Li-Barber, 2012). In addition to this, previous literature suggests that higher levels of user activity and trust in the platform also intensify users' intentions to disclose information (Chang and Heo, 2014).

The relationship between users' privacy and SNS-based disclosures is a complicated one. This relationship is found to be contrary to the information systems (IS) literature in many aspects. In IS literature, privacy is regarded as an important factor that negatively impacts users' acceptance, intentions, trust and disclosures (Dinev and Hart, 2006; Van Dyke *et al.*, 2007). On the contrary, research on Facebook users indicates no or minimal impact of privacy on disclosures (Boyd and Hargittai, 2010; Hoadley *et al.*, 2010). Furthermore, different motivations, including social acceptance, social interaction and communication and information sharing, are found to be in conflict with an individual's motivation to protect his/her privacy (Lipford *et al.*, 2012). These tensions between user concerns and at the same time willingness to be a part of the online community by disclosing extensive amounts of personal information are often termed as "privacy paradox" (Taddicken, 2014). Even though the concept of the "privacy paradox" seems simple and easy to explain, it has not yet been completely explained or investigated (Taddicken, 2014; Wisniewski *et al.*, 2015). This also suggests that other relevant factors, including trust, privacy-seeking behaviours, and usage behaviours, might also interplay here.

Privacy has emerged as one of the serious concerns in relation to sharing content on Facebook. Similar to other SNSs, Facebook is also designed for encouraging and motivating its users to disclose their personal information and share content with others. Prior literature indicates that although Facebook provides privacy settings to control the privacy level, many users still fail to set the appropriate levels of privacy and tend to disclose sensitive information (Acquisti and Gross, 2006; Boyd and Hargittai, 2010; Fogel and Nehmad, 2009). For instance, one recent study indicated that 36 per cent of the total content is shared with default privacy settings on Facebook (Liu *et al.*, 2011). Because of this, many Facebook users expose their personal information and content to more users than they actually expect. In addition to this, Facebook users generally underestimate the threats associated with self-disclosures on the platform (Strater and Lipford, 2008; Taddicken, 2014). However, too much information disclosure through Facebook often results in different privacy-related risks (Krasnova *et al.*, 2010).

2.2 Social networking site photo sharing

Despite the fact that a number of risks and threats are associated with sharing photos on Facebook, it is still the most popular Facebook activity (Duggan, 2013; Madden *et al.*, 2013b). Photo sharing is an active form of visual communication that helps Facebook users in identity management and forming interpersonal impressions (Eftekhar *et al.*, 2014). In addition to this, photos are shared for the purposes of establishing new relationships and maintaining the old ones (Oeldorf-Hirsch and Sundar, 2010) to fulfil users' affection, attention seeking and information sharing needs (Malik *et al.*, 2016) and to gain positive feedback and bridge social capital (Liu and Brown, 2014). Despite these benefits, there are many associated reasons, including reputation management and privacy concerns, because of which not all users engage in Facebook photo sharing (Strater and Lipford, 2008). Privacy concerns and privacy-related issues over photo sharing have emerged, as the current systems have become highly efficient and supportive in sharing, storage and retrieval (Cunningham *et al.*, 2010). Photos shared on Facebook can reveal private and confidential information that the users never intended to share, leading to social embarrassment (Johnson *et al.*, 2012). Furthermore, photos shared on Facebook can also be accessed and viewed by unintended audiences (Taddicken, 2014; Xie and Kang, 2015), which increases the threats of misuse.

The recent study by Litt and Hargittai (2014) indicated that more Facebook users share their photos publicly compared to sharing with restricted access. The other findings include the fact that users who have grown up with privacy concerns and awareness of relevant privacy issues are also more likely to share their photos selectively and less likely to share publicly. Furthermore, users who are more active online are also more likely to share publicly, as they become less sensitive to possible privacy concerns (Litt and Hargittai, 2014). Another study indicated that because of the fact that understanding an extensive and complex set of privacy settings requires effort and a certain level of skills, Facebook users tend to share most of their photos publicly (Boyd and Hargittai, 2010).

Relatively recent literature has focused on understanding the disclosure levels of important life events (Bevan *et al.*, 2014); the gratifications of photo disclosures on Facebook (Malik *et al.*, 2016); the motivations behind location-related disclosures (Chang and Chen, 2014); the relationship between self-disclosure and feedback and social capital (Liu and Brown, 2014); and self-disclosure and regret of sharing (Xie and Kang, 2015). It was also observed that recent years have witnessed a growing interest among researchers in understanding various aspects of privacy specific to various forms of disclosure on Facebook. This work includes understanding location-based information sharing privacy concerns (Kim, 2016), the consequences of voluntary disclosures on Facebook (Waters and Ackerman, 2011), the impact of privacy concerns on different types of self-disclosure such as basic information, factual information and sensitive information (Taddicken, 2014) and the relationship between privacy concerns and Facebook apps and tagging (Wisniewski *et al.*, 2015).

3. Our research model

The research model of this study is designed to explain the impact of privacy awareness, privacy-seeking behaviour and privacy concerns on trust and actual Facebook user activity. Furthermore, it investigates how trust and activity levels relate to users' photo sharing intentions on Facebook.

3.1 Privacy awareness

Privacy awareness refers to the attention and understanding of an individual with respect to various aspects of privacy on Facebook (Zlatolas *et al.*, 2015). The earliest SNS studies revealed that the users were generally unaware about the treatment and usage of the information and content they shared on these platforms (Dinev and Hart, 2006; Raynes-Goldie, 2010). This limited awareness held true for various groups of users regardless of their service usage frequency or levels of privacy concerns (Acquisti and Gross, 2006). However, recent studies have depicted a shifting trend, as privacy awareness among SNS users has risen substantially through mainstream media and other channels (Boyd and Hargittai, 2010; Stutzman *et al.*, 2013; Torres, 2012). Literature on e-commerce suggests that with an increase in privacy awareness among consumers, the trust levels decrease, as well as limiting information disclosure (Dinev and Hart, 2006; Olivero and Lunt, 2004; Van Dyke *et al.*, 2007). However, in the case of SNS, the opposite holds true; despite the increased levels of awareness among users, activities on these platforms keep surging (Torres, 2012). Increased levels of activity by Facebook users indicate that users might also trust the platform, as they are willing to share and disclose more information. Facebook users with high privacy awareness tend to exhibit higher levels of trust in the service and have higher activity levels, as they are more knowledgeable about the reality and expectations (Hoadley *et al.*, 2010; Torres, 2012). Recent studies also suggest that because of the higher awareness levels of privacy-related matters, Facebook users' disclosures have actually increased as they communicate privately or with connected friends rather than with the general public or strangers (Stutzman *et al.*, 2013).

Together, the above findings suggest that the degree to which Facebook users are aware of privacy issues will positively influence their trust in the service and their activity on the platform. We, thus, hypothesise that:

H1. Privacy awareness positively affects users' trust in Facebook.

H2. Privacy awareness positively affects users' photo sharing activity on Facebook.

3.2 Privacy-seeking behaviour

Privacy-seeking behaviour refers to the actions users get involved in to safeguard their information on Facebook (Stutzman *et al.*, 2013). Because of increasing threats and concerns, Facebook users are getting increasingly protective and vigilant about sharing content, especially when it comes to the public sharing of data (Madden and Smith, 2010; Stutzman *et al.*, 2013). Even young adults share content on these sites more carefully, as they consider the possibility of the data being reachable by their friends, employers, colleagues and others (Madden and Smith, 2010). Direct messages, posting false information, removing friends from the friends list, deleting comments by friends and un-tagging people from photos are some of the strategies adopted by Facebook users to protect their privacy (Johnson *et al.*, 2012; Madden *et al.*, 2013a; Young and Quan-Haase, 2013). Privacy-seeking behaviour is adopted to mitigate various privacy threats, especially from strangers on the network. Because of their conscious effort of opting for various privacy protection strategies, users generally feel confident enough to continue sharing content with their friends and peers (Stutzman *et al.*, 2013; Young and Quan-Haase, 2013). Moreover, mechanisms offered by SNSs that help in protecting users' privacy also aid in establishing users' trust with the service (Acquisti *et al.*, 2015). Together, the above findings suggest that the degree to which

Facebook users seek privacy protection measures will positively influence their trust in the service and their actual activity. Thus, we hypothesise:

- H3. Privacy-seeking behaviour positively affects users' trust in Facebook.
- H4. Privacy-seeking behaviour positively affects users' actual photo sharing activity on Facebook.

3.3 Privacy concerns

Privacy concerns, also referred to as privacy risks, reflect the user's concern about his/her information privacy on a website (Dinev and Hart, 2006). Privacy concerns can be broadly categorised into two types; organisational concerns and social concerns (Krasnova *et al.*, 2009a). Regarding organisational concerns, users are mostly concerned about acts by an institute or an organisation, whereas in terms of social concerns, the users are threatened by or concerned about their friends or other users of the service (Krasnova *et al.*, 2009a). Collecting user information, surveillance, data mining, recording user activities, data rights, access by unintended audience, identity theft, online bullying, lost data, online/offline stalking and identity thefts are some of the critical user concerns on SNSs (Debatin *et al.*, 2009; Krasnova *et al.*, 2009a; Strater and Lipford, 2008). The privacy concerns of SNS users can potentially hamper their behaviours, ultimately leading to lower trust in the service and limited activity in the form of reduced information sharing on the platforms (Acquisti and Gross, 2006; Tufekci, 2008). In the SNS environment, privacy concerns represent one of the most important factors that influence trust in the service, as well as the intention to disclose information (Torres, 2012; Wilson *et al.*, 2014). Together, these findings suggest that the degree to which Facebook users are concerned about privacy will negatively influence their trust in the service and the actual activity on the platform. Thus, we hypothesise:

- H5. Privacy concerns negatively affect users' trust in Facebook.
- H6. Privacy concerns negatively affect users' actual activity on Facebook.

3.4 Trust in Facebook

Trust can be defined as one's willingness to depend on Facebook (Lankton and Tripp, 2013). Similar to any traditional service, trust in an online service also plays an important role in gaining the loyalty of the users. In prior IS literature, trust has been regarded as an imperative factor in determining users' activity in online environments (Metzger, 2004; Smith *et al.*, 2011). Furthermore, trust plays an integral role in online marketplace exchanges (Pavlou and Dimoka, 2006), online shopping (Metzger, 2004) and online banking (Yousafzai *et al.*, 2003). Likewise, trust is also one of the crucial determinants of SNS acceptance and usage (Krasnova *et al.*, 2010; Shin, 2010; Wilson *et al.*, 2014). Privacy perception is a critical factor that influences the level of trust by Facebook users (Torres, 2012). The mitigation of privacy concerns encourages SNS users in their frequent and continuous usage of the service (Fogel and Nehmad, 2009; Wilson *et al.*, 2014), building trust in the service (Metzger, 2004; Smith *et al.*, 2011) and information disclosures (Dwyer *et al.*, 2007; Krasnova *et al.*, 2010; Torres, 2012). Higher levels of trust in Facebook have been shown to have a positive impact on information disclosure and continuance intentions on Facebook (Dwyer *et al.*, 2007; Fogel and Nehmad, 2009; Lankton and Tripp, 2013; Shin, 2010). We, therefore, propose trust as a determinant of photo sharing intention:

H7. Trust positively impacts users' intentions to share photos on Facebook.

Furthermore, users' activities on Facebook also have an impact on their intentions to share photos on Facebook. It can be argued that those users who are more active on the platform are more likely to share their photos on Facebook. Thus:

H8. Actual activity on Facebook positively impacts a user's intention to share photos on Facebook.

The research model for this study was developed based on prior literature on privacy, trust and online self-disclosures (Figure 1). The model proposes that users' privacy awareness, privacy-seeking behaviours and privacy concerns have a direct impact on users' trust and activity levels on Facebook, as stated in our hypotheses. Furthermore, the model suggests that users' trust and activity levels subsequently impact users' intentions to share photos on Facebook.

4. Research method

4.1 Data collection and study participants

Data were collected using an online Web-based survey hosted from December 2014 to January 2015. The target audience was Facebook photo-sharing users who were at least 18 years old. The survey was mainly publicised on a number of Facebook groups coupled with the snowball sampling technique. The main criteria for selecting the Facebook groups were that they should target diverse user demographics and that the group should not be targeted towards photo-savvy users. Potential Facebook groups were listed by browsing through the "Suggested Groups" on the Facebook profile of the first author. After screening the potential groups, a chat message with the survey details was sent to the group administrator. In total, 13 Facebook groups accepted the request and posted the survey brief and link on their respective group pages. In the post, we encouraged viewers to forward the post to their friends and acquaintances. A week before the survey's closing date, a reminder was posted in all of the publicised groups. Participation was kept voluntary and anonymous. A total of 554 respondents completed the survey, but after preliminary screening, a total of 174 use cases were deleted, as they were not using Facebook for sharing photos or the responses were incomplete. A total of 378 valid responses were considered for further analysis. The study participants were

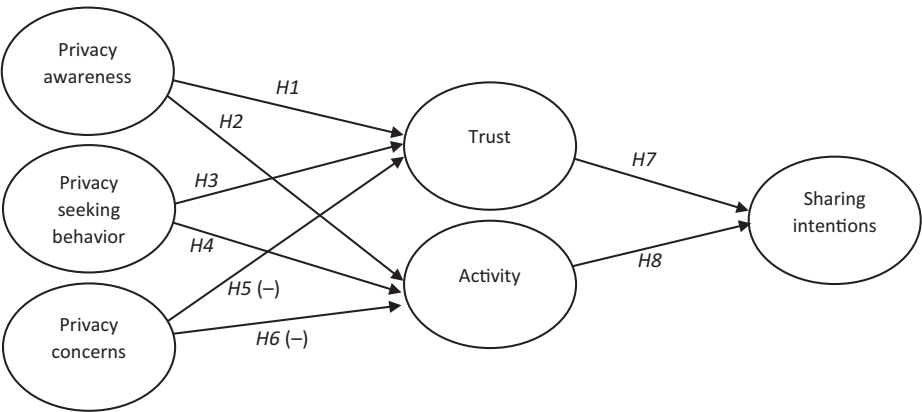


Figure 1.
Research model

aged from 18 to over 55 years. The complete demographic description of the study participants is presented in [Table I](#).

4.2 Study measures

4.2.1 Demographics. The study participants were asked to provide information about their age, gender, educational background and country of residence ([Table I](#)).

4.2.2 Facebook and photo sharing activity. To gain a deeper understanding of respondents' Facebook and photo-related activity, a total of four items were included in the survey. These items were tenure of Facebook use (FBTEN); frequency of visiting Facebook (FBFRE); number of photos shared on Facebook during the past month (FBPHO); and number of photos shared on other SNSs during the past month (SNPHO) ([Table II](#)).

4.2.3 Privacy, trust and sharing intentions. Items measuring the presented model (except activity) consisted of 23 statements ([Table III](#)). All of the items were measured on a five-point Likert scale, where 1 = "strongly disagree" and 5 = "strongly agree".

5. Results

The data were analysed using partial least squares (PLS) path modelling, which is increasingly applied as a statistical method for theory testing in the information systems and social science community ([Gerow et al., 2010](#)). As our measurement model (survey) is newly developed and relatively untested, PLS is a suitable alternative to more traditional covariance-based structural equation modelling ([Urbach and Ahlemann, 2010](#)). PLS has also been recently utilised in the domain of SNS privacy research ([Krasnova et al., 2010](#); [Wisniewski et al., 2015](#)). The PLS analysis performed in this study follows the recommendations of [Marcoulides and Saunders \(2006\)](#). More specifically, the recommendations concerning the theoretical support for the model, data screening and the analysis of the psychometric properties of all of the variables of the model were followed. The actual analysis was conducted using SmartPLS 2.0. The model consisted

Measure	Item	(%) Frequency
Gender	Female	(49.7) 188
	Male	(50.3) 190
Age (years)	18-24	(11) 43
	25-34	(39) 146
	35-44	(29) 108
	45-54	(13) 50
	Over 55	(8) 31
Education	High school or equivalent	(5) 19
	Bachelor's or equivalent	(33) 125
	Master's or equivalent	(45) 170
	Doctorate	(17) 64
Country	Finland	(43) 163
	UK	(15) 56
	USA	(13) 50
	Others	(29) 109

Table I.
Descriptive statistics
on demographics

Table II.
Descriptive statistics
on Facebook and
photo usage

Measure	Item	(%) Frequency
Tenure on Facebook (FBTEN)	Less than one year	(1) 3
	Between one and three years	(4) 14
	Between three and five years	(17) 63
	Over five years	(79) 298
Frequency of visiting Facebook (FBFRE)	Once each week	(3) 13
	Several times a week	(7) 28
	Once each day	(11) 41
	Several times a day	(78) 296
Number of photos shared on Facebook during past month (FBPHO)	Less than 10	(28) 104
	Between 10 and 20	(31) 116
	Between 20 and 50	(25) 94
	Over 50	(17) 64
Number of photos shared on other SNS during past month (SNPHO)	Less than 10	(65) 245
	Between 10 and 20	(21) 78
	Between 20 and 50	(9) 33
	Over 50	(6) 22

of six constructs that are all considered reflective; that is, their indicators present a great level of correlation between them, and a variation of one normally leads to the variation of the rest of the indicators in the same construct. The individual indicators and their descriptions are presented in [Table III](#).

First, the measurement and structural models were evaluated. The evaluation of the measurement model was conducted by ensuring the reliability of the construct (using Cronbach's alpha and composite reliability [CR]), average variance extracted (AVE) and discriminant validity of the latent variables. Second, the structural model was validated to confirm whether the causal relationships were consistent with the available data ([Hair et al., 2013](#))(see [Figure 2](#)).

The indicators' outer loadings ([Appendix](#)) are all higher than 0.7, satisfying the requirement for indicator reliability ([Hair et al., 2013](#)). Similarly, all of the constructs can be considered reliable, as their values for CR > 0.70, thus satisfying the requirement for exploratory research ([Hair et al., 2013](#)) ([Table IV](#)). Moreover, all of the constructs have an AVE > 0.5, satisfying the requirement for convergent validity ([Hair et al., 2013](#)). The discriminant validity is satisfied by comparing the square root of the AVE of each construct with the correlations between constructs ([Table V](#)).

Next, the structural model was evaluated by examining the values of R^2 and Q^2 for predictive relevance, the size of the coefficients of paths and the stability of the estimations by means of the t -statistics obtained in the bootstrap with 3,000 samples. The values of the explained variance R2 and Q2 tests for the predictive relevance for each construct are presented in [Table IV](#). In addition to this, [Table VI](#) presents the proposed hypotheses, path coefficients and respective t -values observed with the level of significance obtained in the bootstrap test.

6. Discussion

Despite the fact that photo sharing is very popular among Facebook users, limited research has explored the complex relationship between users' privacy attitudes, trust and intentions

Construct	Items	References
Privacy awareness	<i>PA1</i> : I have read Facebook's privacy statement <i>PA2</i> : Facebook privacy statement is easy to understand <i>PA3</i> : Facebook privacy settings are easy to use <i>PA4</i> : I understand all the privacy setting of Facebook <i>PA5</i> : I am aware of all the appropriate actions to ensure my privacy on Facebook <i>PA6</i> : I am aware of my privacy rights and responsibilities on Facebook	Torres (2012)
Privacy-seeking behavior	<i>PSB1</i> : Since joining Facebook, I have changed the privacy settings multiple times <i>PSB2</i> : I usually keep track of my photos shared on Facebook <i>PSB3</i> : I usually delete my photos shared on Facebook <i>PSB4</i> : I usually think carefully before sharing my photos on Facebook	Self-developed
Privacy concerns	<i>PC1</i> : Shared photos could be misused by Facebook <i>PC2</i> : Shared photos on Facebook could be accessed by third parties <i>PC3</i> : Shared photos on Facebook could be misused by my Facebook friends <i>PC4</i> : Shared photos on Facebook could be seen by unwanted people <i>PC5</i> : Shared photos on Facebook could reveal private information <i>PC6</i> : Shared photos on Facebook could have negative consequences that I cannot foresee	Acquisti and Gross (2006), Dinev and Hart (2006), Krasnova <i>et al.</i> (2009a)
Trust in Facebook	<i>TiF1</i> : I believe that privacy of my photos is well protected by Facebook <i>TiF2</i> : I believe that Facebook will not use my photos for any other purpose <i>TiF3</i> : I believe that Facebook is a secure platform for sharing photos	Dwyer <i>et al.</i> (2007), Krasnova <i>et al.</i> (2010)
Intention to share	<i>IS1</i> : I intend to keep sharing my photos on Facebook <i>IS2</i> : I would share more photos on Facebook if privacy settings are simplified <i>IS3</i> : I would share more photos if the privacy control policies are verified by a security company <i>IS4</i> : I would share more photos on Facebook if my privacy concerns are addressed properly	Self-developed

Table III.
Measurement of
variables

Figure 2.
PLS model

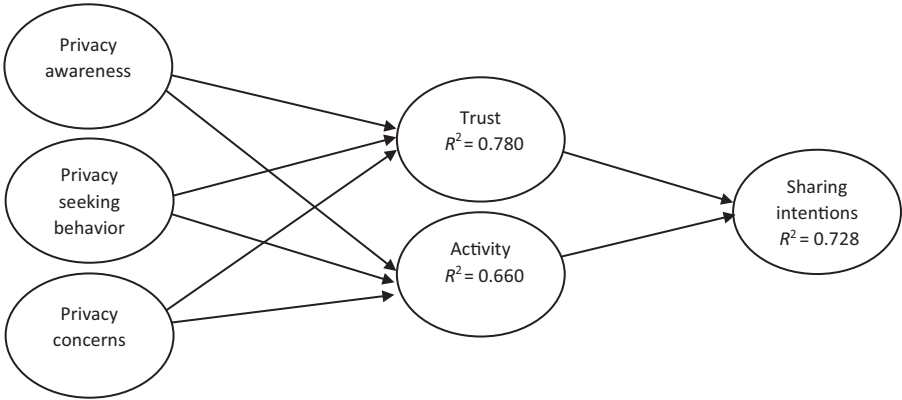


Table IV.
Construct
reliabilities,
explained variance
and predictive
relevance

Study constructs	AVE	CR	Cronbach's α	R^2	Q^2
Privacy awareness	0.87	0.97	0.96		0.80
Privacy-seeking behavior	0.89	0.97	0.95		0.79
Privacy concerns	0.93	0.98	0.98		0.88
Trust	0.94	0.98	0.96	0.78	0.82
Activity	0.75	0.86	0.69	0.66	0.27
Sharing intentions	0.95	0.98	0.97	0.72	0.83

Table V.
 \sqrt{AVE} (diagonal)
and the correlations
between latent
variables

Study constructs	1	2	3	4	5	6
Privacy-seeking behavior	0.94					
Activity	0.80	0.87				
Privacy awareness	0.91	0.77	0.93			
Privacy concerns	0.93	0.78	0.87	0.96		
Sharing intentions	0.89	0.78	0.83	0.90	0.97	
Trust	0.84	0.75	0.87	0.82	0.81	0.97

Table VI.
Path loadings and
 t -values

Study hypothesis	Paths	t -value	Hypothesis
Privacy awareness \rightarrow trust	0.61	12.12**	Accepted
Privacy awareness \rightarrow activity	0.23	3.91**	Accepted
Privacy-seeking behavior \rightarrow trust	0.08	0.78	Rejected
Privacy-seeking behavior \rightarrow activity	0.39	4.58**	Accepted
Privacy concerns \rightarrow trust	0.22	3.49**	Rejected
Privacy concerns \rightarrow activity	0.21	2.82*	Rejected
Trust \rightarrow sharing intentions	0.51	15.06**	Accepted
Activity \rightarrow sharing intentions	0.40	12.43**	Accepted

Notes: *Significant at $p < 0.01$; ** significant at $p < 0.001$

to share photos on Facebook. To address this research gap, the present study has examined the impact of various privacy-related behaviours (including privacy awareness, privacy-seeking behaviour and privacy concerns) and the mediating role of trust and Facebook activity on users' intentions to share photos on Facebook. Through an online survey of 378 participants, the current study contributes by validating the prior SNS literature, examining various privacy aspects of Facebook users.

The study results suggest that privacy awareness has the strongest relationship with trust among three types of privacy-related behaviour (privacy awareness, privacy-seeking behaviour and privacy concerns). This suggests that Facebook users with a higher level of awareness about Facebook privacy tend to trust Facebook more compared to those with less awareness. This is also consistent with the prior literature, which suggests that users with higher privacy awareness exhibit higher levels of trust in the service, as they are more knowledgeable about the reality and actual expectations in the context of their privacy on that platform (Hoadley *et al.*, 2010; Metzger, 2004; Van Dyke *et al.*, 2007). Moreover, because of high awareness about privacy-related issues, Facebook users are more knowledgeable and conscious about sharing their photos. For instance, it is highly likely that they share their personal photos with a limited number of connections (Litt and Hargittai, 2014; Stutzman *et al.*, 2013) instead of sharing publicly. By sharing with a limited number of known friends, they feel confident enough that their photos will not be misused; this ultimately increases their trust level with Facebook.

Our results also indicate a positive relationship between privacy awareness and actual activity on Facebook, suggesting that users who are well informed about privacy issues are more likely to have higher activity levels on the platform, as those users who are generally more aware about privacy-related matters are more realistic and know the expected outcomes (Hoadley *et al.*, 2010; Van Dyke *et al.*, 2007). Higher awareness of privacy might guide them in taking the necessary measures to protect their privacy, consequently making them more confident in exhibiting a higher level of activity than their counterparts. Furthermore, it is quite plausible that privacy awareness leads Facebook users to share increasing numbers of photos with a selected and limited known network (Litt and Hargittai, 2014; Stutzman *et al.*, 2013), as they feel confident enough that their privacy will not be violated. Hence, we can conclude that greater privacy awareness leads to higher levels of trust and activity on Facebook.

The results also indicate that privacy-seeking behaviour has a significant positive relationship with Facebook activity, but its impact on the level of trust with Facebook was negligible. It suggests that users who actively involve themselves in various privacy protection strategies feel more confident and, thus, share more information and content. This is also consistent with earlier Facebook-related studies, for example, Facebook users who spend more time on the site also have higher levels of confidence in using Facebook's privacy settings (Boyd and Hargittai, 2010). Moreover, it is likely that because of high awareness about privacy-related issues, Facebook users opt for various privacy protection strategies to safeguard their shared photos, as Facebook provides an extensive set of privacy-related settings that can help the users in defining various levels of privacy for their photos. As engaging with privacy settings and other protection strategies alleviate privacy threats, users can feel confident enough to share more photos on the platform (Stutzman *et al.*, 2013; Young and Quan-Haase, 2013).

An insignificant relationship between privacy concerns-trust and privacy concerns-users' activity suggests that the privacy concerns of Facebook users do not

impact trust or sharing activity in the service when it comes to sharing photos on Facebook. This finding is contrary to previous findings within the IS domain, signalling a negative relationship between privacy concerns and trust (Metzger, 2004; Van Dyke *et al.*, 2007). Based on the results, we can infer that the privacy concerns and doubts of Facebook users are not translated to their trust in the service or users' activity. From the SNS-focused research point of view, this finding aligns with previous findings that point out the stronger concerns of users when it comes to privacy (Debatin *et al.*, 2009; Tufekci, 2008), although these concerns do not effectively impact their behaviours on Facebook (Boyd and Hargittai, 2010; Debatin *et al.*, 2009; Taddicken, 2014). For instance, it is quite likely that even though Facebook users have high privacy concerns, they consider Facebook an important outlet for sharing their photos with others to fulfil their gratifications. Moreover, it is highly likely that because of increased awareness among Facebook users, they adopt various strategies, such as limiting their sharing network, but do not change their sharing practices. This disconnect between privacy concerns and self-disclosure has also been highlighted in prior literature (Boyd and Hargittai, 2010; Taddicken, 2014). Another reason behind this disconnect can be attributed to users' belief that their privacy has not yet been breached by Facebook, leading to an "it won't happen to me" attitude (Fogel and Nehmad, 2009; Krasnova *et al.*, 2009b). Another plausible reason for this disconnect could be the stronger influence of social threats compared to organisational-level threats. It is quite possible that, in general, Facebook users are more concerned about the threats from their own friends' network, or from other people on Facebook, compared to threats from Facebook itself. It is possible that Facebook users are more concerned about social threats such as cyber bullying, stalking, embarrassment and identity theft compared to organisational or institutional threats (Krasnova *et al.*, 2009a; Raynes-Goldie, 2010; Young and Quan-Haase, 2013), although this assumption needs to be further examined. It is also likely that Facebook users tend to renounce their privacy concerns, as they have a high level of trust in Facebook as an organisation that they feel will safeguard their personal information and data. Furthermore, it is probable that most of the study respondents have been using the service for a while, and they have intentionally or unintentionally accepted the privacy limitations of Facebook to be part of the network to fulfil their communication and self-inclusion needs.

Trust and activity on Facebook were in significant positive correlation with users' intentions to share photos. This suggests that users are more likely to share their photos on Facebook if they have trust in the service. Similarly, the likelihood of sharing photos also increases if users are already active on the platform. This finding is consistent with prior literature which indicates that the more users engage with Facebook, the more information they disclose on the network (Chang and Heo, 2014). Prior literature also indicates that trust is one of the strongest aspects that influence users' activity and willingness to disclose information and content on Facebook (Chang and Heo, 2014; Dwyer *et al.*, 2007). Similarly, the literature also indicated that despite having a dubious reputation with respect to privacy, many users still trust Facebook for sharing content and personal information (Acquisti and Gross, 2006; Dwyer *et al.*, 2007; Fogel and Nehmad, 2009). Moreover, because of trust in Facebook, they also perceive that their shared content will only be accessible to their defined contacts (Taddicken, 2014). In addition to this, other possible factors could be "carelessness", "need for social inclusion" and a "won't happen to me" attitude.

Although numerous studies have been carried out to help understand various aspects of privacy and their impact on disclosure, the current study specifically examined the impact of privacy aspects with regards to one of the leading and most popular forms of content shared on Facebook, i.e. photo sharing. As billions of photos have been shared on Facebook, it is vital to understand the factors that impact this activity. This study fills the current research gap by validating prior literature on SNSs, examining users' privacy and trust aspects in the context of sharing photos. Moreover, our study fills the existing research gap by examining the factors that impact users' intentions to share photos on Facebook.

7. Study implications and future research

The present study offers new knowledge concerning SNS privacy issues and their impact on photo sharing activity. The study results provide important insights into SNS providers and relevant stakeholders regarding the various factors that encourage or limit photo sharing activity on these platforms. To be specific, the results contribute to the existing body of knowledge in computer-mediated communications, SNS behaviour and IS literature addressing privacy-related issues. In addition to this, the study findings also contribute to the limited literature that focuses on studying feature-specific aspects of SNSs, i.e. Facebook photo sharing in the present study. The presented model also attempts to validate some of the key privacy variables that can have a significant impact on users' intentions to share photos on the platform. Therefore, the present study also provides an excellent grounding for future researchers to test the proposed model on various other features of Facebook and also in case of other SNSs besides Facebook.

For researchers and practitioners, this study also offers several practical implications. The proposed model can assist other researchers interested in understanding the relationship between privacy, trust, activity and intentions towards other features such as liking, commenting, video sharing and group/page participation. Furthermore, this model can be replicated to understand the relationship with other forms of self-disclosure on Facebook; for instance, status updates, location check-in and instant messaging. Similarly, the study results could be highly beneficial for information technology designers engaged in developing photo-related features and applications. Finally, the findings also offer insights to SNS providers regarding the various privacy aspects of their users that could eventually help them in refining their existing features and user interactions.

The current study also has a number of limitations that offer new opportunities for future research. First, the components of the measurement model are based on a limited number of items. Therefore, future studies should expand, add new items and test the model. Second, the study participants represent a convenience sample, which is geographically non-bound. Therefore, linking the study findings with a specific culture, setting or geographical area would be difficult. It would be highly interesting to carry out a study in confined countries and cultures and explore the differences between them. Third, the measurement model could be expanded by including additional constructs addressing the user's privacy-related attitudes, perceptions and behaviours. Additional variables such as personality traits, type of photos shared and various gratifications for sharing photos on Facebook could also be included. Fourth, a comparative study should be carried out by replicating the same study in other forms of SNSs such as Twitter, Pinterest and Instagram. Finally, getting detailed insight into various organisational- and social-level threats can also be highly beneficial for the research community.

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Appendix

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Table AI.
Indicator outer
loadings

Items	Awareness	Actions	Concerns	Trust	Intention	Activity
PA1	0.904					
PA2	0.928					
PA04	0.943					
PA05	0.949					
PA06	0.954					
PSB01		0.952				
PSB02		0.949				
PSB03		0.911				
PSB04		0.964				
PC02			0.955			
PC03			0.951			
PC04			0.977			
PC05			0.974			
PC06			0.976			
TiF01				0.973		
TiF02				0.966		
TiF03				0.972		
IS02					0.976	
IS03					0.976	
IS04					0.972	
FBPHO						0.919
FBFRE						0.821

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