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**OBJECTIVES** 

**HYPOTHESES** 

RESEARCH METHODOLOGY

**RESULTS & DISCUSSION** 

**FINDINGS** 

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Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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• Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

### CONFERENCE PAPERS

• Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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### SOCIAL NETWORKS IN THE ERA OF MOBILE DEVICES: THE SIMULATION OF PRIVACY

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### ABSTRACT

Online social networks have become ubiquitous in recent years, mostly because of their relevance to various social processes. Social networks' users have been seduced by attractive interfaces and potential social rewards, putting their personal privacy at risk. In online social networking users are responsible of privacy management, which is implemented by configuring and controlling flow of data. However, the inappropriate use of configuration tools can put users in a potentially hazardous situation, making available their information to unauthorized persons. The rapidly increasing adoption of mobile devices, such as smartphones and tablets enables a variety of social networks applications in which the management of privacy is not only set up by controls on social networks software, but also by the access controls of the mobile device. This work researches the awareness of social network users in managing security and privacy. The research is based on an original framework which was built from two known theories, namely, the communication privacy theory (CPM) by Petronio, and the taxonomy of privacy by Solove. The research data were collected through an online questionnaire, considering different aspects of the relationship between mobile and non-mobile devices, individual privacy rules, and possible risks privacy behavior. The findings showed that users prefer mobile devices to access social networks and online exposure represents the largest perceived risk.

### JEL CODE

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### **KEYWORDS**

communication, privacy, social networks, security.

### INTRODUCTION

ocial interactions mediated through interfaces, devices, and social networks represent a paradigm shift around the relationships between individuals and, in turn, how individuals relate to the surrounding objects. New information and communication technologies have emerged and changed the ways of communication and social interaction. The Internet, social networks, and mobile devices have revolutionized the processes employed by humans to interact with each other.

Users, by accepting to be part of a social network, go into a kind of contract or agreement in which they accept to share their personal information. It appears to be a game in which users are seduced by the interfaces and possible perks that come with using social networks. Certainly, privacy and data security is one of the most important elements in the information age (Gehrke, Lui and Pass, 2011). Given this scenario, the protection of personal information requires measures to promote the safe use of these spaces for social interaction.

Social networks are platforms designed to share personal information. In themselves, they provide mechanisms that alter data visibility, allowing administrators to establish to whom and to what certain information can be submitted in order to protect user privacy. Privacy, in the digital age, can be a utopia; however the concept of privacy should be analyzed as a main feature of social life. People decide what circles make up their environment and what information can be managed and distributed to each of them. In this context, these privacy practices are applied to virtual spaces such as the social networks.

This work researches the awareness of social network users in managing security and privacy. The research addresses how social networks users use privacy management controls through mobile devices. In this study it is particularly relevant the use and management of privacy settings to control the flow of personal information. The research sought to fulfill three objectives: (1) analyze the relationship between individual privacy rules and privacy behaviors played in social networks; (2) analyze the relationship between the benefits, the disclosure of personal information, and the risks that users are exposed by the disclosure of personal information in social networks; (3) identify the importance of the use of mobile devices to facilitate the dissemination and publication of personal information of social networks users.

#### LITERATURE REVIEW

The conceptual framework proposed in this research is supported by the communication privacy management theory (CPM) (Petronio, 2002) and the taxonomy of privacy of Solove (2008). The CPM theory aims to provide an explanation to the process of managing public and private information. In the context of this work, it means to control the flow of information in various forums or spaces where the user is located. The CPM theory explains how people manage their privacy in terms of communication (Mohamed, 2010) and states that people control their privacy by means of rules (Petronio, 2002).

The increase in the use of social media to enhance social interaction involves varying degrees of disclosure and privacy management (Holson, 2010). Users own their personal information, but what happens when that information is distributed through social networks? In such a situation, the user allows, being conscious or unconscious of the results, disclose his or her information. In particular, the data collected in this research were used to analyze the behavior of users' privacy as a result of handling the flow of information or loss of control of personal information once it is broadcasted through social networks.

#### **GENDER AND PRIVACY**

Acquisti and Gross (2006) indicated that there are differences in disclosure between men and women. Acquisti and Gross stated that women are less likely to share data such as sexual orientation, phone number, and physical address of residence. Another study found that men report much information that women, specifically email, username and physical address (Taraszow, Aristodemou, Shitta, Laouris and Arsoy, 2010).

According to the communication privacy management theory, motivation can be found through a link between the parties that get the person to share information that otherwise would not share. There are many motivating factors for disseminating information. One of the factors is the need to increase the number of friends in social networks to compensate for low self-esteem (Roselyn Clark, Park and Kwan, 2012). Other authors (Christofides, Muise and Desmarais, 2009) mentioned the need for popularity as a significant indicator to the level of disclosure specifically on Facebook.

The need for affiliation is presented as a motivating factor to disseminate information on social networks. Borae and Seung (2011) examined the relationship between disclosure and privacy in the context of Facebook. The authors found a direct relationship between the need for affiliation and disclosure.

#### DISCLOSURE OF PERSONAL INFORMATION

Previous researchers (Taraszow et al, 2010; Christofides et al., 2009; Acquisti and Gross, 2006; Utz and Kramer, 2009) reported that participants are willing to share personal information on social networks, specifically Facebook. The date of birth, e-mail, the town where they reside, the sentimental status, profile picture, school, college or department where they study reflect high levels of disclosure. While the phone number and physical address reflects low levels of disclosure. According to Christofides et al. (2009), it is an important factor for the participants of their study to control the visibility of their profile.

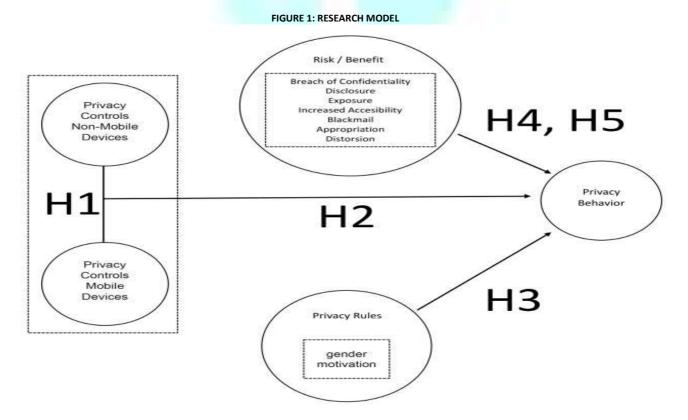
Taraszow et. al. (2010) found that users prefer to use their full name in the user profile and not the first name or a pseudonym. Doing so makes it easy to identify in social networks. Even in previous studies (Tsaoussi, 2011) was considered the positive and negative aspects of using social media, specifically the case of Facebook and how this network has allowed to blur the boundaries between public and private.

The taxonomy of privacy established by Daniel J. Solove (2008) attempts to identify and understand the different kinds of socially recognized privacy violations. Accordingly, this theory can be used to establish the risks that users may face by security breaches in the handling of information. Solove (2008) developed a Taxonomy of Privacy that recognized as information dissemination the following aspects: confidentiality breaches, violation of confidentiality, disclosure, exposure, increased accessibility, blackmail, appropriation, and distortion. Solove model, although not addressed directly to online social networking, does make mention of information technology and the new dynamics of interaction taking place online. Solove established that public distribution of private life has led to rethinking the current conceptions of what is privacy (Solove, 2008). The results of this research showed how users are concerned about the risks they face when disclosing personal information.

### **METHODOLOGY**

In order to accomplish the research paper, this investigation was non-experimental with an exploratory cross-sectional design where the data were obtained at a given time. This design allowed a deeper understanding of a little-studied analysis in Puerto Rico such as the relationship between privacy, social networks, and mobile devices. The population was undergraduate students enrolled in a public university in Puerto Rico, who have an active account on at least one social network. Individuals who voluntarily participated in the study were university undergraduate students. A questionnaire was administered to 131 students. According to Hernandez, Fernandez, Baptista (2003), a sample should be between 100 and 700 subjects if a regional population is selected.

Figure 1 shows the research model. This study compared the use of privacy controls on mobile and non-mobile devices. It examined the relationship between individual privacy rules; the use of privacy controls on mobile and non-mobile devices; and the risk-benefit ratio in the conduct of privacy.



The hypotheses of this study are:

- H1: There are not significant differences in the use of privacy controls between mobile devices and non-mobile.
- H2: The privacy controls on mobile and non-mobile devices used by users affect privacy behavior.
- H3: Gender affects the behavior of the individual prone to privacy disclosure.
- H4: Perceived benefits affects users divulge personal information.
- H5: Perceived benefits affects users take precautions to protect your privacy.

The variables of this study were conduct of privacy, corresponding to the dependent variable and the independent variables were the privacy controls exercised by users on mobile devices and non-mobile, privacy rules of the individual, and the risk / benefit. The rules for individual privacy were the dimensions: gender and motivation. The independent variable risk / benefit has de dimensions: violation of confidentiality, disclosure, exposure, increased accessibility, blackmail, appropriation, and distortion.

#### **RESULTS**

The study showed that users have a lack of mechanisms to manage their privacy in social networks through mobile devices. These mechanisms would ensure greater security for your personal information. From the perspective of developers and system administrators, a mismatch between the product-service was demonstrated and user awareness of its availability. It then requires more promotion on alternatives for safe social networking experience through mobile enabled devices. Accordingly it can minimize the risks to the security of personal information. The literature reviewed indicated that there were differences in terms of gender in the dissemination of information. However, this study showed no differences between gender and behavior of privacy. It further showed that the most concern was derived from the risk of disclosure of personal information.

Hypothesis One (H1) indicates whether there are significant differences in the use of privacy controls between mobile and non-mobile devices. To test hypothesis one, a Wilcoxon test was performed between the variables of privacy controls on mobile and non-mobile, specifically variable automatic login and password for both mobile and non-mobile. Based on Wilcoxon test the null hypothesis was rejected because the p=0 value was less than the significance level ( $\alpha=0.05$ ). The findings showed that there are significant differences between the use of privacy controls between mobile and non-mobile devices. We proceeded to perform the same test using the variable password in mobile and non-mobile devices. In this case, after applying the Wilcoxon test, the null hypothesis was rejected because the p value = 0.016 was less than the significance level ( $\alpha=0.05$ ). The findings showed that there are significant differences between the use of privacy controls between mobile and non-mobile devices.

The second hypothesis (H2) indicates that the privacy controls on mobile devices and used by non-mobile users have significant effects on the behavior of privacy. Table 1 presents a summary of the results obtained.

TABLE 1: SUMMARY OF SPEARMAN TEST FOR MOBILE AND NON-MOBILE BEHAVIOR AND PRIVACY

<b>Privacy Controls</b>	Type of Device	Privacy Behavior						
		var1	var2	var3	var4	var5	var6	var7
Password	mobile	0.892	1.000	0.650	0.400	0.228	0.238	0.615
	non-mobile	0.634	0.287	0.879	0.216	0.581	0.799	0.316
Automatic login	mobile	0.892	0.063	0.155	0.462	0.180	1.000	0.445
	non-mobile	0.045	0.445	0.695	0.629	0.044	0.500	0.956

var1 = kind of profile; var2 = kind of photo; var3 = to disseminate real name in the email; var4 = disclosing telephone number; var5 = to disseminate physical address of residence; var6 = kind of username; and var7 = disclosing the date of birth.

Hypothesis three (H3) states that individual privacy rules represent factors that promotes behavior prone to privacy disclosure. Within privacy rules is genre, while for privacy conduct included profile type, type of photo, disclose real name in the email, disclose phone number, physical address of residence, name, and disclose the date of birth. Responses were compared using the Spearman test. The summary of the results obtained where presented on Table 2.

TABLE 2: SUMMARY OF SPEARMAN TEST FOR GENDER AND PRIVACY CONDUCT

Privacy	Rules	Privacy Conduct						
	var1	var2	var3	var4	var5	var6	var7	
Genre	0.491	0.174	0.904	0.271	0.892	0.474	0.124	

var1 = profile type; var2 = type of photo; var3 = disclose real name in the email; var4 = disclose phone number; var5 = physical address; var6 = name; y, var7 = disclose the date of hirth

The fourth hypothesis (H4) states that the perceived benefits encourage users to disclose large amount of personal information. As perceived benefits data display photos, videos or write about or visited places everyday experiences, participate in discussions or dialogues with friends, find dates or share with actual partner, look for work, play or belong to groups of interest. As for the level of disclosure, data was taken from the type of profile. Responses were compared using the Spearman test (see Table 3).

TABLE 3: SUMMARY OF SPEARMAN TEST OF PERCEIVED BENEFITS AND TYPE OF PROFILE

Disclosure	Perceived benefits / motivation					
	var1	var2	var3	var4	var5	var6
Type of Profile	0.739	0.683	0.042	0.122	0.297	0.776

var1 = show photo, videos or write about or visited places everyday experiences; var2 = participate in discussions or dialogues with friends; var3 = find dates or share with actual partner; var4 = look for work,; var5 = play; y, var6 = belong to groups of interest.

Hypothesis five (H5) established the perception of benefits decreases the precautions taken by users in social networks to protect their privacy. Hypothesis five was tested using the variables of perceived benefits and precautions to protect privacy. The precautions taken by users depend on the level of disclosure of information they disseminated through social networks. Perceived benefits were compared with the behavior of privacy. The effect of the test shows the perception of benefits indicator matchmaking or share with current partner affects users to take precautions to protect their privacy.

### LIMITATIONS AND FUTURE STUDIES

The present study was limited to the analysis of the behavior of user privacy in social networks and the influence of mobile and non-mobile devices. An additional limitation was the population was young university undergraduate students. Further investigation can be done using data from several continuous time periods. By conducting this type of study, data can be compared from three continuous years. Also, consider the age of the participants to achieve a population more representative. A further possibility would be to extend the study population to graduate students. Also, should carry out the study in different universities considering several regions and then compare the results.

### **CONCLUSION**

The study identified data relevant to an understanding of the impact of mobile devices on the phenomenon of social networking. The findings in this study allow us to conclude the following:

• 56.5% of participants identified the smartphone as the most used mobile device.

- 81.7% of respondents identified mobile devices as the main method for accessing social networks.
- Facebook is the leading social network used by the participants in the study (91.6%), YouTube (80.9%), Instagram (58.8%), and Twitter (51.9%).
- 61.1% of participants using a semi-public profile on social networks.
- 80.9% of participants used an identifiable photo on their profile.
- 64.9% of participants used an email with your real name.
- 95.4% of participants did not disclose their phone number.
- 97.7% of participants did not disclose the physical address of residence.
- 90.1% of participants used his real name as the username.
- 73.3 of participants disclose your date of birth.
- 49.6% think it is unimportant how many friends or followers on social networks.
- 69.5% are online every day on social networks.
- · Perceived benefits in the indicator matchmaking or share with current partner, affects users taking precautions to protect your privacy.
- · Perceived benefits in the indicator matchmaking or share with current partner, affects users divulge personal information.
- Gender does not affect the individual's behavior prone to privacy disclosure.
- Significant effect on the type of profile and disclosure of physical residence address on auto login for non-mobile devices.
- There are significant differences in the use of privacy controls between mobile and non-mobile devices.

Finally, the results obtained in this study allowed us to know valuable information about uses of the privacy mechanisms those users in social networks through mobile devices. Various industries, educational, and social institutions in Puerto Rico can use the results of this research as benchmarks for their work, studies or future decisions.

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