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Organizational Information Security: The Impact of Employee Attitudes and Social Media Use

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ABSTRACT

Social media has infiltrated organizations through employees bringing these popular tools from their personal lives into the workplace. Organizations have begun to realize that social media applications can be used for more than just connecting individuals.

The purpose of this research-in-progress is to investigate the use of social media by employees in both their personal lives and their roles in the workplace. In this pilot study, the use of social media is examined to determine how it is related to an employee's perceptions and attitudes towards organizational information security policies.

This pilot study was conducted at small, medium or large organizations in France. There were 46 usable responses. The preliminary findings confirm that an employee's personal use of social media services is related to an employee's use of social media services at work as well as it shows that there is a lack of awareness of security risks associated with the use of social media.

Keywords: Social media, organizational information security, attitude, perceptions, awareness

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INTRODUCTION

Social media has infiltrated organizations through employees bringing these popular tools from their personal lives into the workplace. Organizations have begun to realize that social media applications can be used for more than just connecting individuals, but also for communicating their brand and message to consumers (Constantinides & Fountain 2008). The ability to connect with customers and create a strong flow of knowledge between the organization and consumers has strategic value for many organizations. The importance of openness and maximizing the flow of information entering and exiting the organization are a key success factor for social media (Goh, Ang, Chua, and Lee 2009).

The purpose of this research-in-progress is to examine how the introduction and use of social media technology by employees (either in their personal or professional lives) is related to employee attitudes regarding corporate information security and related policies.

BACKGROUND

Attitudes towards Information Security

The significance of the effects of employees' attitudes on information security and assurance is generally recognized within the information security literature (Mishra and Dhillon 2006). An organization's overall security status does not only depend on its technical elements but also on its behavioral aspects such as employees' security attitudes and security awareness. The rising use of social media in the workplace and the lack of awareness of employees of their security and privacy responsibilities can be detrimental to an organization. Schultz (2002) argued that insider attacks are more successful than outsider attacks, and such weaknesses in an organization engender a high cost not only in monetary terms but also with respect to reputation (*Global Information Security Survey* 2002). Sushma and Dhillon (2006) discussed information systems security governance by classifying security countermeasures into five categories:

Proactive security culture, internal control assessment, security policy implementation, individual values and beliefs, and security training. Similarly, Stanton, Yamodo-Fagnot and Stam (2005) claimed that training and security awareness are essential components to improve organizational security. Effective security organization, positive security leadership, monitoring of employees' behaviors (D'Arcy 2005) and a clear designation of user roles and behaviors become beneficial countermeasures to improve security status (Fagnot 2007).

Social Media Use in Organizations

Social media has emerged as an important strategic tool for organizations to facilitate communication with their employees, customers, and other external partners. Boyd and Ellison (2007) defined social media as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (p. 1). While social media have been widely adopted by society, organizations have only recently realized their value (Awazu and Desouza 2004; Yates, Wagner, and Majchrzak 2010). These technologies provide users with the ability to respond quickly to changes in the information and the environment, and provide flexibility, adaptability, usability and customizability in both the system and the information.

Much of the recent emphasis on the risks related to the use of social media has focused on the individual level. Many organizations (and even national governments) have become concerned with the level of privacy offered by popular social networking sites such as Facebook.

Slowly, organizations understand that the issues faced by individual use of social media are comparable to those experienced by employees. The risks associated with employee use of social media are becoming clearer as the use of these technologies mature (Yates and Paquette

2010). Our research expands upon the risk perspective of organizations in regard to social media by examining the effect of social media tools and technologies on the culture of the organization.

Hypotheses

We posit that the practices of social media use and the desired culture of information security in organizations are not compatible. This research-in-progress examines the use of social media by employees in both their personal lives and their roles in the workplace. This use of social media is then examined to determine what effect it has on an employee's perceptions and attitudes towards organizational information security policies. We hypothesize: 1) **Hypothesis 1**: An employee's personal use of social media services is related to an employee's use of social media services at work. 2) **Hypothesis 2**: An employee's personal use of social media services is related to an employee's attitudes towards organizational information security policies. 3) **Hypothesis 3**: An employee's use of social media services at work is related to an employee's attitudes towards organizational information security policies.

METHODS

A pilot survey was developed and conducted in anticipation of the main study. The data for the pilot study was collected through a web-based survey in order to test the three hypotheses, as well as measure the constructs. The survey questions (see Appendix A) were developed based on our conceptual framework and on the literature on survey development (Dillman 2000), organizational information security (Stanton and Stam 2006) as well as attitudes (Ajzen 1991). The three variables introduced in our conceptual framework were used to develop three separate questionnaires to assess participants' use of social media (both personal use and use at work) and their attitudes towards security measures. Participants were asked to rate their level of agreement with statements relating to their behaviors towards social media and organizational information

security utilizing a 7-point Likert scale. There were incentive awards for participation to the survey, including the chance to win one of 15 $10 Amazon.com gift certificates.

This pilot study was conducted at organizations in France. The survey was sent out to about 430 employees in small, medium or large organizations in France. There were 46 usable responses (approximately 10.5% response rate) in the final data set for this pilot study. Almost all participants held a position in top management in various industry sectors: pharmaceutical, insurance, retail, to name a few. The sample consisted of 16 females and 30 males. Participants were at least 18 years old that ensured compliance with ethics. It can be observed that the majority of respondents (N=34) were between the ages of 36 and 55. In other words, these participants were exposed to some level of technology during their growth. A fifth of all respondents (N=9) were between the ages of 26 to 35. These participants received greater exposure to IT during their upbringing and school years. One participant was between the age of 18 and 25, and two were over 55 years old.

PRELIMINARY FINDINGS

The preliminary results from our initial data collection were transferred into SPSS for analysis. Three variables were tested: Personal Use, Use at Work, Security Attitudes. Our first analysis was conducted to verify the conceptualization of the constructs. A factor analysis showed that all items behaved correctly. As a result none of the items were deleted. However two items were reverse-coded before running analyses. Then, in order to confirm internal validity of constructs, Cronbach's Alpha reliability analysis was performed to provide estimates for each multi-item scale used in the experiment. Cronbach's Alpha for Personal Use of Social Media was: $\alpha = .805$; for Use of Social Media at the Work Place, it was: $\alpha = .904$, and for Attitude towards Security Measures, it was: $\alpha = .819$. Cronbach's Alpha are between $\alpha = .805$ and $\alpha =$

.904 which indicates that the scales have high internal consistency. The questions measured their intended constructs adequately.

To gain a further understanding of the use of social media by the survey respondents, a bivariate correlation analysis was performed to show the strength of the relationship between variables. Table 1 below presents the output of the correlation analysis for the three variables.

Table 1. Correlations among variables

		1	2	3
1	Personal Use of Social Media	1	.615**	.079
2	Use of Social Media at the Work Place	.615**	1	.190
3	Attitude towards Security Measures	.079	.190	1

**. Correlation is significant at the 0.01 level

In terms of hypothesis one, the analysis showed that personal use of social media is positively related to social media use at work, with a coefficient of $r = .615$, which is also significant at $p < .001$. Thus hypothesis H1 is confirmed. We find this logical, as many employees who have incorporated the use of social media into their personal lives have also discovered benefits that transfer to their professional work and careers.

For the second hypothesis, the analysis showed that personal use of social media is positively related to attitude towards security, with a coefficient of $r = .079$, which is not significant. Thus hypothesis H2 is not confirmed. This appears to demonstrate the disconnect between the use of social media and the culture that is supported by an organizational information security policy.

Finally, the analysis related to the third hypothesis revealed that social media use at work is positively related to attitude towards security measures, with a coefficient of $r = .190$, which is not significant. Thus hypothesis H3 is not confirmed. Although many organizations are using social media within their routines and processes and these services can add value to professional

activities, the attitudes of employees towards security measures can differ from the practices used in social media.

CONCLUSIONS

This pilot study investigated the link between personal and professional use of social media, and the attitudes towards an organization's information security policy and culture. We posited that the increasing use of social media and its underlying philosophy of widespread information sharing are not compatible with organizational security tenets of information protection. In fact, it may be possible that social media use influences an employee's attitude towards information security rules within an organization, and the incompatibility of the two presents a security risk for organizations.

The level of social media use at work is not currently at the level of personal use, and possibly may never reach a comparable level of use at work. The growth noted in professional social media use points to a recognition that social media has the potential to be a valuable and effective organizational technology that organizations need to manage as they would any other information system. Organizations have the opportunity to be proactive to educate these employees to ensure any allowable use of social media brings value to the organization not additional risk.

As this research initiative is in its early stages, the data collected is not enough to analyze the study's variables and hypotheses in detail. Further data collection is required to further verify the relationships between the variables defined in the report, and to further confirm (or disconfirm) our hypotheses. We believe this research has begun an important exploration into the relationship between social media and information security from a behavioral perspective.

REFERENCES

Ajzen, I. 1991. "The theory of planned behavior," *Organizational Behavior and Human Decision Processes* (50), pp. 179-211.

Awazu, Y., and Desouza, K. 2004. "Open Knowledge Management: Lessons from the Open Source Revolution," *Journal of the American Society for Information Science and Technology,* (55:11), pp. 1016-1019.

Boyd, D., and Ellison, N. B. 2007. "Social Network Sites: Definition, History, and Scholarship," *Journal of Computer-Mediated Communication,* (13:1).

Constantinides, E., and Fountain, S. 2008. "Web 2.0: Conceptual Foundations and Marketing Issues," *Journal of Direct, Data, and Digital Marketing Practice,* (9), pp. 231-244.

D'Arcy, J. 2005. *Improving IS Strategy Through Procedural and Technical Countermeasures: An Analysis of Organizational Security Measures*. Philidelphia, PA: Temple University Irwin L. Gross e-Business Reserch Report.

Dillman, D. A. 2000. *Mail and Internet Surveys: The Tailored Design Method*. John Wiley & Sons, Inc, New Yor, NY.

Fagnot, I. 2007. "Behavioral Information Security," in *Encyclopedia of Cyber Warfare and Cyber Terrorism*: Berkshire Publishing Group LLC, (1), pp. 199-205.

Global Information Security Survey. 2002. Ernst & Young LLP.

Goh, D. H.-L., Ang, R., Chua, A. Y. K., and Lee, C. S. 2009. "Why We Share: A Study of Motivations for Mobile Media Sharing," *Lecture Notes in Computer Science,* (5820/2009), pp. 195-206.

Mishra, S., and Dhillon, G. 2006. *Developing Theoretical Base for Studying Governance: The Case of Information Security*. Paper presented at the Web 2006 - International Conference on Information System.

Schultz, E. E. 2002. "A Framework for Understanding and Predicting Insider Attacks," *Computers & Security,*(21:6), pp. 526-531.

Stanton, J. and Stam, K. 2006. *The Visible Employee: Using Workplace Monitoring and Surveillance to Protect Information Assets- Without Compromising Employee Privacy or Trust*, Information Today, New Bedford, NJ.

Stanton, J. M., Yamodo-Fagnot, I., and Stam, K. R. 2005. *The Madness of Crowds: Employee Beliefs about Information Security in Relation to Security Outcomes.* Paper presented at the The Security Conference, Las Vegas, NV.

Yates, D., and Paquette, S. 2010. *Emergency Knowledge Management and Social Media Technologies: A Case Study of the 2010 Haitian Earthquake*. Paper presented at the The American Society for Information Science and Technology Annual Meeting (ASIS&T).

Yates, D., Wagner, C., and Majchrzak, A. 2010. "Factors Affecting Shapers of Organizational Wikis," *Journal of the American Society for Information Science and Technology,* (61:3), pp. 543-554.

APPENDIX A: SURVEY INSTRUMENT

We are interested in your personal use of social media services. Please answer the following questions:

Which social media do you use during <u>your personal time</u> for <u>your own personal use</u>?

- ☐ Facebook
- ☐ Twitter
- ☐ LinkedIn
- ☐ MySpace
- ☐ YouTube
- ☐ Blogs
- ☐ Other - please specify

How frequently would you say that you use these social media during <u>your personal time</u>?

- ○ More than 10 times a day
- ○ Between 5 and 10 times a day
- ○ Less than 5 times a day
- ○ Less than 5 times a week

Please read the following statements about your personal use of social media carefully. Then indicate to which extent you agree or disagree with them.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. Social media is important for keeping in touch with my friends.	○	○	○	○	○	○	○
2. Social media is important for keeping in touch with my family.	○	○	○	○	○	○	○
3. Social media is an important tool for sharing information with my friends.	○	○	○	○	○	○	○
4. Social media is an important tool for sharing information with my family.	○	○	○	○	○	○	○
5. I do not share personal information on social media sites.	○	○	○	○	○	○	○
6. I am not concerned with the privacy of the information I share on social media sites.	○	○	○	○	○	○	○
7. It is important for me to fully understand the privacy options of social media technologies.	○	○	○	○	○	○	○
8. Social media makes my life better.	○	○	○	○	○	○	○
9. Social media services are the primary tool I use for communicating with my friends.	○	○	○	○	○	○	○
10. I share personal information with others via social media.	○	○	○	○	○	○	○
11. I trust social media sites with my private information.	○	○	○	○	○	○	○
12. I do not mind sharing private information on social media as long as it makes my life better.	○	○	○	○	○	○	○

We are interested in your work use of social media services. Please answer the following questions:

Which social media do you use at the <u>workplace for work related tasks</u>?

- ☐ Facebook
- ☐ Twitter
- ☐ LinkedIn
- ☐ MySpace
- ☐ YouTube
- ☐ Blogs
- ☐ Other - please specify

Is your company providing <u>their own proprietary social media tools</u>?

- ○ Yes
- ○ No

If yes, please describe how that social media is used in your company.

How frequently would you say that you use these social media <u>during working hours</u>?

- ○ More than 10 times a day
- ○ Between 5 and 10 times a day
- ○ Less than 5 times a day
- ○ Less than 5 times a week

Please read the following statements about your use of social media at the workplace carefully. Then indicate to which extent you agree or disagree with them.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. Social media is an important tool for connecting with colleagues within my company.	◎	◎	◎	◎	◎	◎	◎
2. Social media is an important tool for connecting with colleagues outside my company.	◎	◎	◎	◎	◎	◎	◎
3. Many of the people I work with have access to my personal information via social media.	◎	◎	◎	◎	◎	◎	◎
4. Social media is an important tool for sharing information with colleagues within my company.	◎	◎	◎	◎	◎	◎	◎
5. Social media is an important tool for sharing information with colleagues outside my company.	◎	◎	◎	◎	◎	◎	◎
6. I rely on social media to provide me with information I need to do my job.	◎	◎	◎	◎	◎	◎	◎
7. Social media makes my job better.	◎	◎	◎	◎	◎	◎	◎
8. Using social media for work purposes is a productive use of my time.	◎	◎	◎	◎	◎	◎	◎
9. I trust the information I receive from social media for use in my job.	◎	◎	◎	◎	◎	◎	◎
10. It is important to create connections with colleagues through the use of social media.	◎	◎	◎	◎	◎	◎	◎
11. I try to post information about my work on social media sites to provide others information they may need.	◎	◎	◎	◎	◎	◎	◎
12. I was highly encouraged by my colleagues to use social media.	◎	◎	◎	◎	◎	◎	◎
13. Social media is important for keeping in touch with my colleagues.	◎	◎	◎	◎	◎	◎	◎
14. Using social media at work for work purposes takes up a lot of my valuable time.	◎	◎	◎	◎	◎	◎	◎
15. I use social media at work for non-work related tasks.	◎	◎	◎	◎	◎	◎	◎
16. I am required to use social media at work to do my job.	◎	◎	◎	◎	◎	◎	◎
17. I feel it is important to maintain my network of contacts.	◎	◎	◎	◎	◎	◎	◎
18. Many of the people I work with have access to my non-work related information via social media.	◎	◎	◎	◎	◎	◎	◎
19. I take initiative on my own to keep connected with people I know.	◎	◎	◎	◎	◎	◎	◎
20. I take initiative on my own to figure out new ways to get value from social media.	◎	◎	◎	◎	◎	◎	◎

Please read the following statements about your organization's information security policies carefully. Then indicate to which extent you agree or disagree with them.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. My company has an information security policy.	○	○	○	○	○	○	○
2. My company has a policy specifically for the use of social media at work.	○	○	○	○	○	○	○
3. My company's security policy covers the technologies currently being used by employees in my company.	○	○	○	○	○	○	○
4. My company's security policy covers the social media tools currently being used by employees in my company.	○	○	○	○	○	○	○
5. I follow my company's security policy to the best of my ability.	○	○	○	○	○	○	○
6. My company's security policy inhibits my ability to share information with others.	○	○	○	○	○	○	○
7. I am very careful in what information I share with people within my company via social media.	○	○	○	○	○	○	○
8. I am very careful in what information I share with people outside my company via social media tools.	○	○	○	○	○	○	○
9. It is always in my company's best interest for me to share information with others inside my company.	○	○	○	○	○	○	○
10. It is always in my company's best interest for me to share information with others outside my company.	○	○	○	○	○	○	○
11. In my opinion, it is important for my company to have an information security policy.	○	○	○	○	○	○	○
12. In my opinion, it is important for my company to have a policy regarding the use of social media by employees.	○	○	○	○	○	○	○
13. Employees in my company strictly follow the corporate information security policy.	○	○	○	○	○	○	○
14. If I am unsure of whether I should share information with others, I am more likely to share the information.	○	○	○	○	○	○	○
15. If I am unsure of whether I should share information with others, I play it safe and do not share the information.	○	○	○	○	○	○	○
16. Protecting the security of information within my organization is an important part of my job.	○	○	○	○	○	○	○

Please use the space below to answer the following question:

In what ways, if any, do social media make your work easier? Please specify the social media in question.

Please use the space below to answer the following question:

If you have experienced or witnessed a situation in which social media caused harm to you or a colleague, please describe the event and resulting situation below.

DEMOGRAPHICS

Please select your gender.

○ Male

○ Female

Please select your age.

○ 18 to 25 years old

○ 26 to 35 years old

○ 36 to 55 years old

○ Older than 55 years old

Please indicate your position within the company.

Please indicate your years of experience at your current company.

Please indicate your years of work experience overall.

Please indicate whether you currently work in Canada, France or the United States.

○ Canada

○ France

○ USA

Please indicate which industry sector you work in.

Please use the space below to provide us with any additional comments, suggestions or feedback about this research project.