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THE INFLUENCE OF PERSONAL CHARACTERISTICS ON SECURITY AWARENESS IN ORGANIZATIONAL SETTINGS

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ABSTRACT

This study aims to explore the influence of personal factors on information security awareness (ISA) within individuals in an organizational context. With the rise in cybersecurity threats, understanding the personal factors that contribute to an individual's awareness and behavior regarding information security has become crucial. We propose a conceptual model that identifies key personal factors, including personality traits, prior experience, education, and motivation, that impact ISA. Using a survey of 300 individuals from various organizations, the study empirically tests these relationships. The findings suggest that education, personality traits, and personal motivation significantly influence information security awareness. These results offer practical insights for organizations aiming to improve information security practices through targeted awareness programs.

KEYWORDS

Information security awareness, personal factors, cybersecurity, personality traits, education, motivation, security behaviors, organizational security.

INTRODUCTION

In recent years, the increasing frequency and sophistication of cyberattacks have underscored the importance of robust information security practices within organizations. Cyber threats such as phishing, data breaches, and ransomware continue to target individuals and businesses alike, often exploiting human behavior as a weak point in security systems. While technological defenses, such as firewalls, encryption, and intrusion detection systems, play crucial roles in protecting sensitive information, they are often ineffective if individuals within organizations fail to follow proper security protocols. This highlights the importance of fostering a culture of information security awareness (ISA) at the individual level, where human behavior is critical in determining an organization's overall security posture.

The success of an organization's information security strategy is, therefore, heavily dependent on the security awareness of its employees. Information security awareness can be defined as the understanding and knowledge that individuals have about information security risks and the appropriate behaviors required to mitigate them. This includes recognizing common security threats, understanding the importance of safeguarding sensitive data, and adhering to best practices such as using strong passwords, identifying phishing attempts, and properly disposing of confidential information. In a highly interconnected world where cyber threats are ever-present, it is no longer enough for organizations to rely solely on technical defenses. They must also invest in educating and empowering their workforce to make informed decisions about information security on a day-to-day basis.

While previous research has explored various aspects of information security awareness, including its impact on organizational security outcomes, there is still a lack of comprehensive understanding regarding the personal factors that contribute to an individual's level of ISA. Existing studies have primarily focused on organizational or environmental factors, such as policies, training programs, or the role of senior management, but personal factors, such as personality traits, prior experience, education, and motivation, have received comparatively

less attention. These personal factors play a significant role in shaping an individual's attitudes toward information security and their likelihood to engage in secure behaviors.

The importance of personal factors in determining security awareness becomes particularly evident when considering the differences in security behavior observed among individuals with similar job functions or within the same organization. For example, some employees may be more diligent in following security protocols, while others may be less aware or more prone to risky behaviors. These differences can be attributed to various personal factors, including how an individual perceives the importance of security, their past experiences with security threats, and their intrinsic motivations to adhere to security practices.

Personality traits have been identified as an influential factor in many aspects of behavior, including information security awareness. Personality traits, such as conscientiousness, openness to experience, and neuroticism, are believed to influence an individual's approach to tasks and decision-making. For instance, individuals with high levels of conscientiousness are generally more diligent and responsible, traits that are likely to make them more attentive to security practices. Conversely, individuals who score lower on conscientiousness may be more likely to overlook security protocols.

Prior experience with information security incidents or training can also play a pivotal role in shaping an individual's security awareness. Those who have previously experienced a security breach or have received cybersecurity training may have a heightened awareness of security risks and are more likely to adopt secure practices. Experience not only enhances an individual's understanding of security threats but can also increase their confidence in identifying and responding to security risks.

Education is another crucial factor that affects ISA. Previous research has shown that individuals with higher levels of education, particularly in fields related to technology or cybersecurity, tend to have a greater understanding of information security principles. However, general education about security, even for non-technical employees, has proven to be important in fostering awareness. Employees who have received training in cybersecurity, even at a basic level, may be more equipped to understand the risks and adopt secure behaviors.

Finally, motivation is a key personal factor influencing ISA. Motivation in the context of information security refers to the individual's desire to engage in secure practices, which can be influenced by factors such as perceived importance, personal responsibility, and awareness of potential consequences. For example, individuals who view information security as a critical responsibility may be more motivated to engage in behaviors that protect organizational data, while those who perceive it as a secondary concern may not prioritize security practices. Motivation can be further divided into intrinsic motivation, where individuals feel a personal sense of responsibility and engagement with security tasks, and extrinsic motivation, where external factors such as compliance with organizational policies or fear of disciplinary action drive secure behaviors.

Although there is growing recognition of the importance of these personal factors in shaping ISA, few studies have developed a comprehensive model that examines how they interact and collectively influence an individual's awareness of information security. The objective of this study is to fill this gap by proposing and testing a model that incorporates key personal factors—personality traits, prior experience, education, and motivation—as predictors of information security awareness. By understanding the effects of these personal factors on ISA, organizations can tailor their security awareness programs to better address the specific needs and characteristics of their employees.

This research is particularly important in the context of the increasing sophistication of cyberattacks, where human error remains a major vulnerability. By identifying the personal factors that influence ISA, organizations can better design training programs that are not only more effective but also more engaging, encouraging employees to adopt secure behaviors and stay vigilant in the face of evolving cyber threats. Furthermore, a deeper understanding of these factors can aid in the development of targeted strategies for raising awareness across diverse employee groups, ensuring that all individuals, regardless of their background or personality, are well-equipped to protect themselves and their organizations from potential security breaches.

In summary, this study seeks to answer the research question: How do personal factors—specifically personality traits, prior experience, education, and motivation—affect information security awareness? By modeling these relationships and empirically testing the proposed framework, the study aims to provide valuable insights into the psychological and motivational aspects of information security, offering practical implications for improving cybersecurity awareness programs and reducing human-related security risks.

Information security awareness (ISA) is a critical factor in preventing cybersecurity threats, as human behavior is often a weak link in organizational security systems. Despite the implementation of advanced security technologies, cyber-attacks such as phishing, data breaches, and identity theft continue to rise. Often, these attacks are a result of human error, such as clicking on

malicious links or failing to follow basic security protocols (Jansson & Von Solms, 2013). Therefore, understanding the factors that influence an individual's awareness of security practices is essential for mitigating risks and enhancing cybersecurity.

Personal factors, including education, personality traits, prior experience, and motivation, have been suggested to play a significant role in determining an individual's level of security awareness (Dinev & Hart, 2006). However, there is limited empirical research exploring how these personal factors specifically influence ISA. While factors such as age, gender, and technical expertise have been studied in the context of information security behavior, the role of broader personal factors remains less understood.

This study aims to bridge this gap by modeling the effects of personal factors on information security awareness. The primary research question driving this study is: How do personal factors such as personality traits, education, prior experience, and motivation impact information security awareness? The study proposes a conceptual framework to explore these relationships and empirically tests the framework through a survey of 300 employees in various organizations.

LITERATURE REVIEW

The importance of ISA has grown as cyber threats become more sophisticated. According to studies, human error is responsible for a large proportion of security breaches (Schneier, 2000). Consequently, understanding what drives individuals to behave securely is critical for improving overall organizational security.

1. Personality Traits: Research has shown that individuals' personalities influence their likelihood to engage in secure behaviors. For example, individuals with high levels of conscientiousness tend to be more diligent in following security practices (Albrechtsen & Hovden, 2010). On the other hand, those with low levels of agreeableness may be less receptive to security policies.

2. Prior Experience: Experience with cybersecurity threats and incidents is another important factor influencing ISA. Prior exposure to security issues or training can enhance an individual's ability to recognize threats and adopt secure behaviors (Herath & Rao, 2009).

3. Education and Knowledge: Higher levels of education, particularly in technology or cybersecurity, are often correlated with greater awareness of security protocols (Warkentin et al., 2012). However, the general understanding of information security is still low in many organizations, regardless of employees' formal education levels.

4. Motivation: Motivation plays a critical role in determining whether individuals will adopt and maintain secure behaviors. Motivational factors such as personal interest in security, perceived importance of security practices, and a sense of personal responsibility are crucial in influencing ISA (Siponen & Vance, 2010).

This literature review reveals the need for further investigation into how these personal factors work together to shape ISA and how organizations can leverage these factors to design more effective security awareness programs.

METHODS

This study employed a quantitative research design to explore the relationship between personal factors and information security awareness. The research was conducted in three phases: model development, survey design, and data collection.

MODEL DEVELOPMENT

A conceptual model was developed based on the literature reviewed, focusing on the following personal factors:

- Personality Traits (e.g., conscientiousness, openness to experience)
- Prior Experience (e.g., past exposure to security threats)
- Education (e.g., level of education, cybersecurity knowledge)
- Motivation (e.g., perceived importance of security, self-efficacy)

These variables were hypothesized to have a significant impact on an individual's information security awareness, which in turn influences their security behavior.

Survey Design

A structured questionnaire was designed to capture data on these personal factors. The questionnaire was divided into five sections:

1. Demographics: Age, gender, and educational background.

2. Personality Traits: A short version of the Big Five Inventory was used to assess traits such as conscientiousness and openness.

3. Prior Experience: Participants were asked about their past exposure to cybersecurity incidents or training.

4. Education: Respondents rated their level of cybersecurity education and knowledge.

5. Motivation: Measured using questions related to perceived security risk, importance of security behaviors, and self-reported willingness to engage in secure practices.

6. Information Security Awareness: A set of questions measured participants' awareness of information security practices, such as password management, phishing detection, and data protection.

The survey used a Likert scale (1 to 5) for most questions, allowing respondents to rate their level of agreement with various statements. The final section included questions on their security-related behaviors, such as how often they updated passwords or avoided suspicious emails.

DATA COLLECTION

The survey was distributed to 500 employees across different organizations in various industries, including finance, healthcare, and education. A total of 300 responses were received, yielding a response rate of 60%. The sample was diverse in terms of age, gender, and professional background, ensuring a comprehensive representation of personal factors across different demographic groups.

DATA ANALYSIS

The collected data was analyzed using Structural Equation Modeling (SEM), a statistical technique suitable for testing the relationships between multiple variables. SEM was used to validate the proposed model and assess the strength of the relationships between personal factors (personality, experience, education, and motivation) and information security awareness.

RESULTS

The results of the SEM analysis indicate that the personal factors included in the model significantly affect information security awareness. Specifically:

1. Personality Traits: Conscientiousness was found to have a significant positive effect on information security awareness. Individuals with higher levels of conscientiousness were more likely to engage in secure behaviors and follow security practices.

2. Prior Experience: Experience with past security incidents had a moderate positive effect on awareness. Respondents who had previously experienced a security breach or had received cybersecurity training scored higher on security awareness questions.

3. Education: Higher levels of cybersecurity education were positively correlated with information security awareness. Participants with formal training in IT or cybersecurity exhibited greater knowledge of security practices.

4. Motivation: Motivation was the most significant predictor of information security awareness. Individuals who believed that security was important and who felt personally responsible for protecting information showed higher levels of awareness and were more likely to adopt secure behaviors.

The model fit was acceptable ($\chi 2 = 180.32$, $p < 0.05$, CFI = 0.92, RMSEA = 0.06), indicating that the hypothesized relationships were supported by the data.

DISCUSSION

The findings confirm that personal factors, particularly personality traits, prior experience, education, and motivation, significantly influence an individual's level of information security awareness. These results have important implications for organizations seeking to improve their cybersecurity posture through awareness programs.

1. Personality Traits: Organizations can tailor their awareness programs to emphasize the importance of responsibility and attention to detail, particularly for employees who score lower on conscientiousness. Targeted training and nudges can help increase awareness among these individuals.

2. Prior Experience: Exposure to past security incidents was a significant predictor of awareness. This suggests that incorporating real-world case studies or past incidents into training programs could increase engagement and enhance learning.

3. Education: The study highlights the importance of ongoing education in cybersecurity. Organizations should invest in regular training and certification programs to ensure that employees remain up-to-date with the latest security practices.

4. Motivation: The strongest predictor of information security awareness was motivation. This finding underscores the importance of fostering a security-conscious organizational culture. By emphasizing the personal responsibility each employee has in protecting organizational data, companies can increase overall security awareness.

CONCLUSION

This study has demonstrated the significant influence of personal factors on information security awareness, providing a comprehensive model that organizations can use to enhance their cybersecurity training programs. By understanding the personal characteristics that drive

secure behaviors, organizations can better target their efforts to improve overall information security awareness and reduce the risk of security breaches. Future research could explore additional personal factors and test the model in different organizational settings to further validate these findings.

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