December 2001

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Recommended Citation

Lee, Sang-Jun; Nah, Fiona; and Yoo, Sangjin, "An Integrated Model on Computer Abuse: A Pilot Study" (2001). *AMCIS 2001 Proceedings*. 419.
http://aisel.aisnet.org/amcis2001/419

AN INTEGRATED MODEL ON COMPUTER ABUSE: A PILOT STUDY

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Abstract

In spite of continuous organizational efforts and investments based on systematic factors, the incidence of computer abuse in organizations is still rapidly increasing. This paper proposes another perspective -- based on the general strain theory -- in preventing computer abuse. According to the general strain theory, organizational trust, which comprises organizational attachment, commitment, involvement, and norms, can prevent computer abuse by reducing insiders' computer abuse. The aim of this article is to assess the role of organizational trust from the perspectives of attachment, commitment, involvement, and norms in preventing computer abuse. The results indicate that both organizational trust and deterrent factors are effective in preventing computer abuse.

Introduction

In this customer-centric world of instant access and continuous connection, E-business initiatives that outpace security are a recipe for disaster. From the organizational perspective, one of the roles of information systems is to prevent computer abuse. Managers indicate that security is high on their to-do list. According to InformationWeek (August 2000), nearly three-quarters of 4,900 survey respondents regard computer abuse as a top priority. Interestingly, recent research indicates that the primary threat of security abuse comes from within the organization -- from insiders such as employers and managers (Olson and Olson, 2000).

The main objective of this article is to apply an integrated model of computer abuse by combining the general deterrence theory (GDT) and the general strain theory (GST). More specifically, we will incorporate the GST into the existing GDT-based model and assess the degree to which the integrated model explains computer abuse. The findings from this research will be helpful to organizations in preventing computer abuse.

Literature Review

Research based on general deterrence theory explains computer security from the perspective of technology alone without considering other factors such as people, and process (Nowworthy, 2000; Eloff and von Solms, 2000; Dhillon and Backhouse, 2000). In view of the above perspective, we contend that for any security solution to be effective, it should take into account the human dimension. A recent study by the Computer Security Institute (CSI) and evidence from FBI documents indicate that the most serious losses in companies are committed by unauthorized insider access (Power, 2000). In this research, we adopt the perspective from General Strain Theory, which was established by Agnew, to explain insiders' computer abuse. Agnew (1992) developed social control theory and then presented a general strain theory of crime and delinquency that is capable of overcoming the criticisms of the previous strain theory suggested by Bernard (1984) and Cole (1975). Agnew (1991) also argued that there are three theories underlying general strain: Social strain theory, Social control theory and Social learning theory.

According to the social control and social learning theories presented by Hirschi (1969), social bond is made up of three dimensions: attachment, commitment and belief (Hirschi 1969; Krohn, 1995; Sampson & Laub 1992; Shoemaker 1990). Agnew (1992) defined social control and social learning measures as parental attachment, parent permissiveness, school attachment, peer attachment, time spent on homework, grades, educational goals, and friend's delinquencies, and strain measures as negative life event, life hassles, negative relations with adults, parental fighting, neighborhood problems, unpopularity with opposite sex,

occupational strain, and clothing strain. On the basis of GST, we adopt a new set of measures for organization trust based on four factors: attachment, commitment, involvement, and norms (e.g., Agnew 1991, 1993; Anderson et al. 1999; Costello and Vowell 1999).

Research Model and Methodology

Figure 1 shows the research model. All of the constructs shown in the research model were operationalized using measures from the existing literature. Table 1 shows the measures for the deterrent construct, organizational trust constructs, and computer abuse construct used in this research.
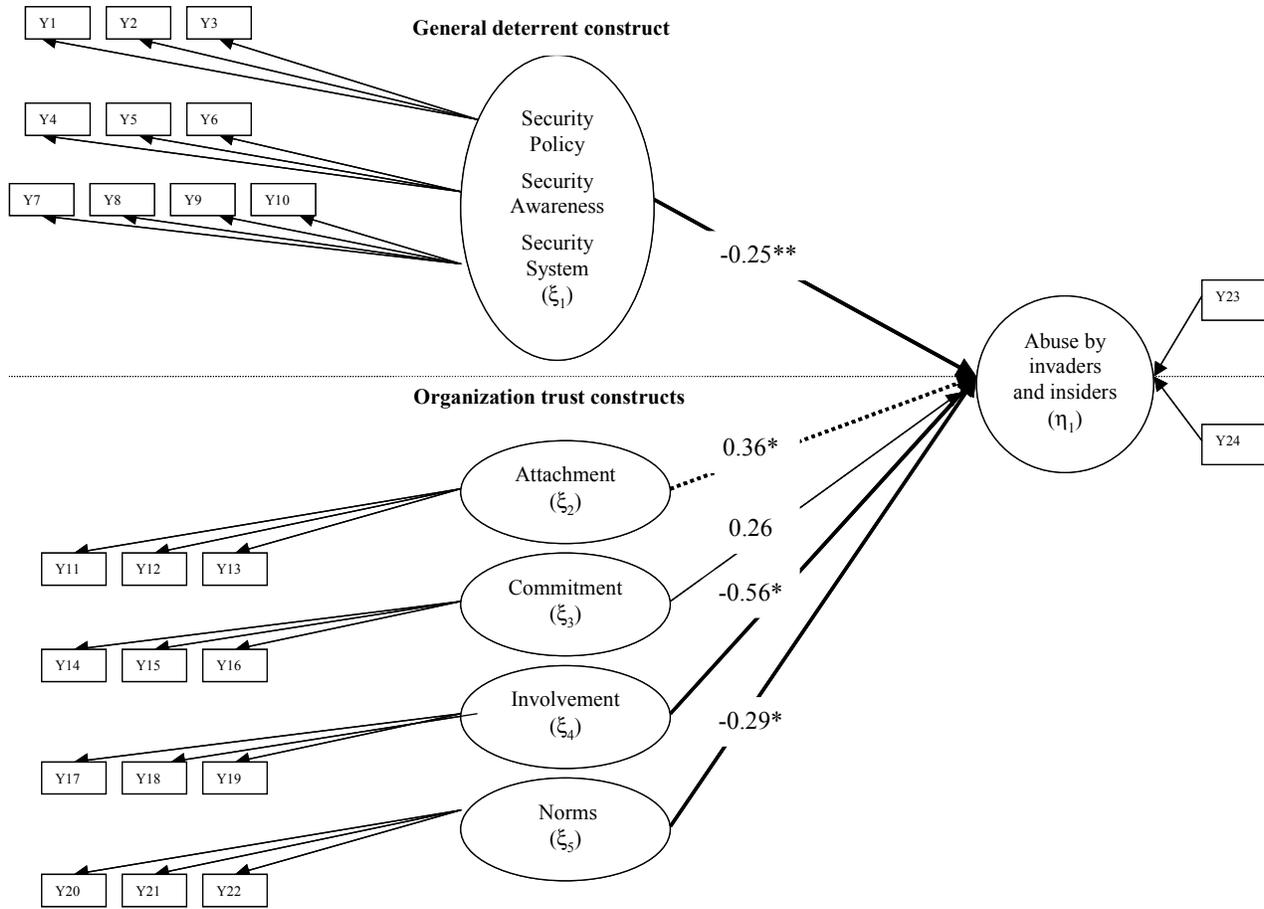
*p <0.10   ** p <0.05

Figure 1.   Research Model and LISREL Paths in Structural Equation Model

Based on the research model and the existing literature on GDT and GST (Kwok & Longley, 1999; Solms, 1999; Straub, 1990, Agnew 1991, 1992, 1993, 1995; Agnew and White, 1992; Makki and Braithwaite, 1994; Paternoster and Mazerolle, 1994; Elis and Simpson, 1995), which suggest that the deterrence and organizational trust factors can reduce computer abuse, we developed the following hypotheses:

As for the methodology, we used the survey approach. The survey was distributed to 500 computer users. A total of 130 responses were received and 13 were discarded due to missing values. We tested the hypotheses proposed using the remaining sample of 117. The analysis was carried out using path analysis, which provides simultaneous tests of model relationship as well as estimates for measurement error in the constructs. LISREL 8.3 was used for the analysis.

Table 1. Concepts, Constructs, and Measures of Research Model

H1: Deterrent factors will reduce computer abuse.
H2: Attachment factor will reduce computer abuse.
H3: Commitment factor will reduce computer abuse.
H4: Involvement factor will reduce computer abuse.
H5: Norms factor will reduce computer abuse.

Concepts	Constructs	Measure Description
General Deterrent Theory	Security policy	• Effectiveness of security policy (Y1) • Severity of security policy (Y2) • Helpfulness of security policy (Y3)
	Security awareness	• Effectiveness of security awareness (Y4) • Severity of security awareness (Y5) • Helpfulness of security awareness (Y6)
	Physical security system	• Degree of security system effectiveness (Y7) • Investment on security system (Y8) • Sufficiency of budget for security system (Y9) • Efficiency of security systems (Y10)
General Strain Theory	Attachment	• Co-workers as an important part of your business life (Y11) • Respect for co-worker's views or opinion (Y12) • Reliance on co-workers when they work at your business unit (Y13)
	Commitment	• Desire to succeed within the business unit (Y14) • Enhance your capability of the task (Y15) • Importance for the success of your business unit (Y16)
	Involvement	• Opportunities to participate in formal meetings (Y17) • Personal relationship with people (Y18) • Loyalty to company (Y19)
	Norms	• Moral strength (Y20) • You just do not have any choice but to break the law (Y21) • It is right to get around the law if you can get away with it (Y22)
Computer Abuse	Computer Abuse	• Frequency of computer abuse within the industry (Y23) • End users' perception of frequency of computer abuse (Y24)

Findings and Conclusion

This study empirically investigates the application of general deterrence theory and general strain theory in the context of computer abuse. The constructs underlying the general deterrence theory include security policy, security awareness, and security systems whereas the constructs underlying the general strain theory are involvement, commitment, attachment, and norms.

This study examines factors that prevent computer abuse. The proposed model draws upon new factors (organizational trust constructs) aimed at preventing computer abuse based on the general strain theory. This theory explains that organizational trust, which generates social bonds, negatively affects behavior to commit computer abuse, whereas the general deterrence theory explains that security policy, security awareness programs, and system access controls prevent computer abuse. With the exception of attachment and commitment, the rest of the independent variables, which are the deterrent factors as well as the involvement and norms factors, have a negative impact on computer abuse. The results suggest that the enhancement of social bonds through organizational trust is another effective mechanism that helps prevent computer abuse in organizations. The main contribution of this study is in integrating general strain theory into research on computer abuse.

References

References are available upon request from authors.