



Information systems security policy compliance: An empirical study of the effects of socialisation, influence, and cognition



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ABSTRACT

This study investigated employees' information systems security policy (ISSP) compliance behavioural intentions in organisations from the theoretical lenses of social bonding, social influence, and cognitive processing. Given that previous research on ISSP compliance has been based on deterrence theory, this study seeks to augment and diversify research on ISSP compliance through its theoretical perspective. Relevant hypotheses were developed to test the research conceptualisation. Data from a survey of business managers and IS professionals confirmed that social bonds that are formed at work largely influence attitudes towards compliance and subjective norms, with both constructs positively affecting employees' ISSP compliance. Employees' locus of control and capabilities and competence related to IS security issues also affect ISSP compliance behavioural intentions. Overall, the constructs in the research model enhance our understanding of the social-organisational and psychological factors that might encourage or accentuate employees' ISSP compliance in the workplace.

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1. Introduction

To compete and survive in today's turbulent operating environments, organisations (public and private) continue to rely on and invest heavily in information systems (IS) [22,39]. The protection of the information and other data assets that are held in such systems is a major concern for practitioners and has emerged as a key managerial priority [13,28,33,51]. To protect critical IS assets, organisations often deploy security technologies, such as firewalls for perimeter defence and comprehensive monitoring systems (e.g., log management, data leak prevention, content monitoring technologies). These tools offer a technological or technical solution to the problem but are rarely sufficient in providing total protection of organisational IS resources [17,36,51]. This is because socio-organisational imperatives are considered relevant in fostering desired outcomes for organisations in such issues [36,42,45,52].

The onus is therefore on organisations to utilise multi-perspective approaches for protecting their IS assets and resources [17]. Researchers have indicated that organisations that fail to focus on individual and other organisational issues, alongside technology-based solutions, may fail to achieve success in their efforts [30,36,45,51,52]. Despite the huge investments that organisations make in procuring IS security tools, failings related to security incidents and breaches continue to be a significant

problem [23,32,37]. One of the reasons why IS security incidents and abuses continue to plague organisations is that organisational employees are the weakest link in ensuring IS security; they constitute an insider threat to their organisations [13,42,45,52]. Thus, a beneficial approach to safeguarding IS resources requires that organisations focus on their own employees' intentions and behaviours.

One of the mechanisms that organisations use in shaping or influencing the behaviours of their employees with respect to how an IS is efficiently used is through the rules, guidelines, and requirements laid out in their information systems security policy (ISSP) [5,20,24,33,43]. However, the literature suggests that even if an ISSP is in place to help safeguard an organisation against the misuse, abuse, and destruction of IS assets, its employees often do not readily comply with such documents [13,23,33,51]. Studies are needed to enhance our understanding of issues that may serve to inhibit or encourage ISSP compliance in organisations. Research on ISSP compliance in organisations is beginning to receive increased attention in the extant literature [2,5,51–53].

Anderson and Agarwal's [2] review of the literature in this area indicated that the majority of previous ISSP compliance research was carried out from the perspectives of criminological theories (i.e., general deterrence theory, rational choice theory, situational crime prevention theory) and the health belief model (i.e., protection motivation theory). While previous research efforts favouring these perspectives have advanced knowledge in the area, we contend that other theoretical underpinnings could further provide insight into ISSP compliance. We argue that organisational

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issues rooted in socialisation and social influence, as well as personal beliefs and cognition, can equally influence ISSP compliance behavioural intentions; others have provided similar arguments [5,15,17].

Research focusing on criminology has tended to accept sanctions and penalties as the only means by which IS misuse and abuse can be deterred [16,17,28,30]. Such studies implicitly have suggested that when violations and misbehaviours are severely punished, employees will cease to engage in such unacceptable behaviours. However, new insights have emerged that call this viewpoint into question. For instance, Vance et al. [51], Son [43], and Hu et al. [20] showed that ISSP compliance research using criminology and fear appeal theories do not always explicate noncompliance behaviours. According to these researchers, when employees err, they may use neutralisation techniques to circumvent or minimise the effects of reprisals from their organisations.

To increase knowledge, this research was designed to complement the few evolving studies based on socialisation and social psychology theories in understanding ISSP compliance in organisations [2,7,13,15,27]. Compliance, being a complex concept, should be studied from differing perspectives to enhance knowledge [3]. That said, it is axiomatic among scholars across disciplines that the Theory of Planned Behaviour (TPB), which encompasses Social Cognitive Theory (SCT), can explain innumerable behaviours, including ISSP compliance-related behaviours [15,27]. In this study, we integrated the recomposed TPB with Social Bond Theory (SBT), given that the latter may be suitable for adapting the former to working environments where social bonds might influence job-related perceptions and behaviours [7,13].

2. Theoretical background

2.1. Theory of planned behaviour

Social influence refers to the change in an individual's thoughts, actions, feelings, attitudes, or behaviours that results from their interactions with another individual or group [1,12]. The Theory of Reasoned Action, from which the theory of planned behaviour (TPB) was developed, underscores the social influence perspective. The TPB, which was proposed by Ajzen [1], postulates that individual behaviour is influenced by attitude, subjective norms, and perceived behavioural control. Attitude is defined as the individual's positive or negative feelings towards engaging in a specified behaviour. Subjective norms describe an individual's perception of what people important to them think about a given behaviour. Perceived behavioural control is defined as the individual's beliefs regarding the efficacy and resources needed to facilitate a behaviour.

The TPB has been widely used in investigating information system's ethical behaviours and individual's decision to comply with an ISSP [15,26,29]. Consistent with such previous studies, we posit that employees' intentions to comply with an ISSP will be influenced by attitude, subjective norms, and perceived behavioural control. However, we recomposed the TPB's perceived behavioural control construct by two measures related to social cognitive theory (SCT) for parsimony's sake and because the recomposed TPB tends to possess higher explanatory power [47]. The approach used here is consistent with those of others investigating comparable themes [54].

2.2. Social cognitive theory

Social cognitive theory is a relevant premise for explaining human behaviour [4]. SCT allows for the simultaneous and dynamic interplay between social and personal factors to be

studied. SCT posits that individuals are actively engaged in their own development and obtain desired results when they believe that their actions are under their own control [4]. Accordingly, Workman et al. [54] decomposed SCT into two main elements; i.e., locus of control [40] and self-efficacy [4].

Locus of control refers to the degree to which an individual believes that he or she has the ability to control events that directly or indirectly affect them. Rotter [40] suggested that people who believe that they control their own destinies will accept responsibility for their actions. Essentially, people who feel that outcomes are beyond their control may shift the responsibility of their actions to others [40].

Self-efficacy simply refers to individuals' belief in their own competence and capabilities [4]. It fundamentally highlights the extent to which individuals feel and think about motivating themselves to completing specific tasks or actions. Stajkovic and Luthans [44] noted that such beliefs could cause individuals to think either pessimistically or optimistically regarding accomplishing work-related tasks. Similar to prior research [54] that used self-efficacy and locus of control to investigate computer safety behaviours, we posit that ISSP compliance will be positively enhanced when employees believe that they have the required competency and control to help them comply with their organisation's ISSP.

2.3. Social bond theory

Social bond theory (SBT) describes the binding ties or social bonding that individuals have with their group [19]. Hirschi [19] presented four bonds by which socialisation and conformity are promoted; i.e., attachment, commitment, involvement, and personal norms. The theory postulates that when people build upon such bonds, their urge to indulge in antisocial or antiestablishment behaviours is reduced. In the context of this research, attachment refers to the identification with organisational values vis-à-vis ISSP. Commitment highlights individuals' effort and energy expended to support their organisation's ISSP. Involvement refers to building relationships with other employees. Personal norms refer to an individual's own values and views of ISSP.

3. Research model and hypotheses

Following the preceding discussion, the research model is presented in Fig. 1. The decision to model the effects of SBT's constructs on attitude towards compliance and subjective norms is consistent with similar research conceptualisations in the area [2,5]. For instance, the TPB suggests that normative beliefs determine subjective norms, i.e., social influence or pressure. That is, if people believed that their referent individuals or groups (i.e., supervisors, coworkers) approved the behaviour, they would feel socially pressed to behave as expected. SBT's constructs explicitly measure social bonding in organisations and are closely related to subjective norms. In addition, attitude towards compliance benefits significantly from social information and interactions in the workplace [39,49]; thus, where greater bonding exists, favourable personal attitudes towards what a workgroup or an organisation considers important often ensue [7,13,15,46]. The control variables are included to enhance the insight into ISSP compliance. In particular, given the popularity of sanctions and penalties, i.e., deterrence theory, among IS security researchers [20,28,30,43], we decided to include constructs from that theory as part of the control variables. The research hypotheses are discussed next.

Employees attached to their organisations and with strong ties to colleagues tend to uphold values of importance to their organisations [6,39,46,49]. Chan et al. [7] found that employees

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