

**THE ROLE OF EXTERNAL MECHANISMS AND TRANSFORMATIONAL
LEADERSHIP IN INFORMATION SECURITY POLICY EFFECTIVENESS: A
MANAGERIAL PERSPECTIVE OF FINANCIAL INDUSTRY IN VIETNAM**

THAI PHAM

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Department of Business Information Systems
Faculty of Business, Economics, and Law

Supervisor
Dr Farkhondeh Hassandoust

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Author's Name: Thai Pham

Signature:

Date: 1 March 2021

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Abstract

Information security policy (ISP) violations are one of the biggest concerns for all organisations around the world, resulting in billions of direct and indirect losses, especially in the financial industry. While different justifications can be made to explain the performance of ISP, the low-level commitment of senior management and inadequate enforcement mechanisms are regarded as the critical factors leading to ISP inefficiency and breaches in organisations. The extant literature has argued that senior managers and their leadership style play a crucial role in enforcing employees' compliance with ISP. However, previous research has mostly investigated the behavioural aspects of ISP compliance at the individual level and there has been a lack of investigation on the effectiveness of ISP from managerial and organisational perspectives.

Thus, this study investigated the predictors of ISP effectiveness by 1) examining the effect of external mechanisms on the motivation of senior management commitment and 2) evaluating the influence of transformational leadership on the enforcement of organisational ISP. Drawing on neo-institutional theory, this research investigated the influence of external mechanisms – coercive, mimetic, and normative – on the effectiveness of ISP through the mediator role of senior management participation in ISP. Applying the transformational leadership framework, this study also evaluated the impact of transformational leadership on ISP effectiveness through the mediating effect of ISP enforcement.

The proposed research model was implemented using field survey data of 207 professional managers in the financial sector. Partial least square structural equation modelling (PLS-SEM) was used to test the proposed hypotheses. The results reported that coercive and mimetic mechanisms positively influence senior management participation in ISP, which eventually leads to a higher level of ISP effectiveness in an organisation. It was also found that ISP enforcement mediates the relationship between transformational leadership and ISP effectiveness in an organisation.

This study provides theoretical and practical contributions. Drawing on neo-institutional theory and the transformational leadership framework, this research produced an integrated theoretical model to

understand ISP effectiveness. Moreover, this study broadens current ISP research from an individual level to a managerial perspective. The research findings enhance the existing literature of neo-institutional theory and extend transformational leadership studies in the context of ISP effectiveness within organisations. In practical terms, this study provides organisations and senior managers with a better understanding of the influencing factors in the external environment that affect organisational decisions. Organisations might find it useful to evaluate and take advantage of those mechanisms to motivate the commitment of senior managers in ISP, which will in turn contribute to ISP management. Furthermore, this study indicates the importance of senior managers' leadership skills in promoting ISP enforcement and ISP effectiveness. This finding might help organisations in examining senior managers' competency and in constructing a human resources development plan.

Chapter 1. Introduction

The introduction of this study contains three parts. The first part highlights the significance of this study and its motivation to examine the effectiveness of information security policy (ISP) in organisations generally, and in financial institutions specifically. This section also introduces the literature related to this study and its application to the research as a whole. The second part presents the objectives of this research and its research questions, and the third part reviews the research design and contributions of this study.

1.1. Significance and Motivation of this Research

According to Gartner Research (2020b), the global expenditure on information technology (IT) in 2020 was projected to decline by 5.4% because of the continuing spread of COVID-19. However, it was estimated to recover and grow by 4% to achieve \$3.8 trillion in 2021 (Gartner, 2020b). Despite the decreasing trend in global IT spending in 2020 due to the pandemic, the global expenditure on IS and risk management was projected to grow by 2.4% – \$123.8 billion – in 2020 (Gartner, 2020a). Worldwide changes in working conditions did not reduce the importance of IS; instead, they shifted investments in IS to certain fields such as cloud adoption and remote working technologies (Gartner, 2020a). Information security (IS) breaches are one of the biggest concerns for all organisations around the world, resulting in billions of direct and indirect losses (Jang-Jaccard & Nepal, 2014; Lanz & Sussman, 2020; Mihaela, 2020; Teh et al., 2015). Cybersecurity incidents lead to direct and significant economic losses through operational disruption, legal expenses relating to customers' claims, and information theft and sabotage – or indirect effects leading to a firm's reduction in value due to private information disclosure (EY, 2020; ISACA, 2019; Steinbart et al., 2018). Regardless of the increasing investment in technological aspects of IS, organisations are still facing a growing loss because of the negligence of employees (Chang & Lin, 2007; Chen et al., 2012; Hassandoust et al., 2020).

PricewaterhouseCoopers (PwC) reported that in 2020, more than 40% of financial organisations experienced information-related fraud (PwC, 2020). In 2013 in the United Kingdom, 94% of banks were influenced by employee-related violations, and more than 50% of IS violations arose from the employee's non-compliance (Teh et al., 2015). Thus, due to the intensive amount of sensitive information in the financial industry, the development and effectiveness of IS are crucial for every financial firm (Teh et al., 2015; Von Solms, 2001).

Although the importance of IS has been highlighted for several decades, IS violations still occur for several reasons, including the low-level commitment of the senior management level or the board (Ahmad et al., 2014; Chang & Ho, 2006; EY, 2020; ISACA, 2019; Von Solms, 2001). Ernst & Young (EY) (2020) reported that in 2020, 60% of organisations did not have a head of IS position at the executive management level or the board, thus influencing senior management engagement in IS. The issues do not come from the senior management's lack of awareness of IS; rather, they originate from the low level of understanding, skills, and engagement of high-level executives (EY, 2020). In order to minimise these issues, it is essential that senior level managers engage in IS-related procedures and policies (Hu et al., 2007; Knapp & Ferrante, 2014; Knapp et al., 2007). Senior management commitment to IS will contribute to ensuring employees' compliance with information security policy (ISP) by raising employees' awareness, promoting cooperation among them, and effectively enforcing policies (Barton et al., 2016; Choi, 2016; Daud et al., 2018; Veiga & Eloff, 2007). Senior management participation in ISP awareness and policy enforcement programmes will improve employees' perception about the benefits and costs of complying and in turn, reduce violating behaviours, thus advancing IS and effective ISP management (Knapp & Ferrante, 2012; Knapp et al., 2007). Despite the crucial role of senior managers in ISP effectiveness, there has been inadequate attention paid to the determining factors motivating senior management involvement in this process (Pham & Hassandoust, 2020). As a result, there is a need to evaluate the influence of external mechanisms on senior management involvement in ISP and the promotion of ISP effectiveness.

Empirical evidence suggests that employees usually involve in non-compliance behaviours because of ineffective security awareness programme or lack of ISP enforcement (Bulgurcu et al., 2010; Herath & Rao, 2009; Kajtazi et al., 2018). Policy enforcement plays a role of providing employees with an understanding of ISP benefits or consequences and compelling them to take appropriate actions to comply with ISP and in turn, reduce the chances of penalties, demotion, and firing (Goo et al., 2014; Knapp & Ferrante, 2012; Knapp et al., 2007). In the survey of global information security in 2020, EY (2020) reported that 59% of organisations regarded the relationship between IS and other departments as mistrustful or non-existent, leading to inconsistency in ISP enforcement and a lower level of employees' understanding of IS. This issue also creates confusion and ambiguity in compliance or non-compliance behaviours (EY, 2020; Mink & Greifeneder, 2010). Thus, organisations should have proactive approaches towards IS by providing effective and uniform enforcement of ISP to gain employees' awareness and willingness to participate in ISP. Such enforcement can also minimise the deviant behaviours of employees and control ISP compliance, thus driving its efficiency (Knapp & Ferrante, 2012).

Although software can create uniform enforcement of ISP via administrator alerts and reports, the involvement of leadership is inevitable in organisational ISP compliance (David, 2002; Knapp & Ferrante, 2014; Knapp et al., 2007). Leaders usually act as organisational representatives, and their behaviours affect organisational behaviours (Gilbert et al., 2011). Their leadership styles improve subordinates understanding of policies, procedures, and norms, promote affective commitment and reduce organisational deviance (Jiang et al., 2015; Mostafa & Shen, 2020). Moreover, management's leadership style also plays an important role in ISP enforcement by facilitating the ISP implementation, promoting IS best practices and reducing ISP misuse behaviours inside organisations (Barton et al., 2016; Knapp et al., 2006; Knapp et al., 2007; Veiga & Eloff, 2007). Organisations need senior managers' leadership to promote the security management through appropriate actions such as articulating the vision, objectives, and strategies of the organisation; communicating and inspiring employees; and governing, enforcing, and maintaining the IS environment (Daud et al., 2018; Knapp et al., 2006; Veiga & Eloff, 2007). Empirical evidence highlights

the benefits of transformational leadership on organisational satisfaction and performance as compared to other leadership styles (Niehoff et al., 1990; Podsakoff et al., 1990; Sosik, 1997). Transformational leaders can gain followers' trust and satisfaction through both soft and harsh power bases, leading to employees' organisational citizenship behaviours going beyond expectations (Pierro et al., 2013; Podsakoff et al., 1990). Despite the fact that transformational leadership can work as a mechanism to promote organisational performance (Dvir et al., 2002; Kark et al., 2003; Price & Weiss, 2013), there is inadequate research's attention on the relationship between transformational leadership and ISP enforcement. Thus, this study also argues the importance of examining the influence of transformational leadership on ISP effectiveness in organisations through the mediating effect of ISP enforcement.

1.2. Research Objective and Research Questions

Drawing on neo-institutional theory and the transformational leadership framework, this study investigates and seeks to understand the relationship between senior management participation in ISP, transformational leadership, ISP enforcement, and organisational ISP effectiveness. Applying neo-institutional theory (DiMaggio & Powell, 1983), this research investigates the impact of external mechanisms – coercive, mimetic, and normative mechanisms – on senior management involvement in ISP and in turn on the effectiveness of ISP in organisations. Further, through applying a transformational leadership framework (Bass, 1985; Podsakoff et al., 1990), this research investigates the significance of adopting transformational leadership in helping senior managers improve ISP effectiveness through the mediator role of ISP enforcement.

Based on these arguments, this research seeks empirical evidence to answer two research questions:

Research Question 1: What is the impact of neo-institutional factors on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Sub research question 1.1: What is the impact of coercive mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Sub research question 1.2: What is the impact of mimetic mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Sub research question 1.3: What is the impact of normative mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Research Question 2: What is the impact of transformational leadership on the effectiveness of ISP in organisations through the mediator role of ISP enforcement?

The result can shed light on the critical institutional factors and the crucial transformational leadership behaviours that significantly affect the effectiveness of ISP.

1.3. Research Design and Contributions

This study applies a postpositivist philosophical approach and undertook quantitative causal research utilising an online survey method. All the constructs of this research were multi-item scales adjusted from established scales of literature with minor adjustments to match with the context of ISP. A seven-point Likert scale was adopted for all measurement items, ranging from strongly disagree (1) to strongly agree (7). The online survey was developed on the Qualtrics platform provided by Auckland University of Technology (AUT). The study incorporated a pre-test, pilot, and main study, collecting data from managers who are aware or in charge of ISP inside their organisations within the financial sector in Vietnam. Partial least square- sequential equation modelling (PLS-SEM) was employed for data analysis and conducted on Smart PLS 3.0. The results of this study illustrate that all the hypotheses are supported except Hypothesis 3 regarding the impact of normative mechanisms on senior management participation in ISP and Hypothesis

7 regarding the moderator role of the security, education, training awareness (SETA) programme on the relationship between ISP enforcement and effectiveness in organisations. The research findings are explained based on the current literature, which leads to a discussion on the theoretical and practical contributions in the IS field.

This research aims to provide both theoretical and practical contributions. Theoretically, this research presents an integrated model for evaluating the important factors related to ISP effectiveness and extends the IS research that has mainly conducted at the individual level (e.g., employees' compliance) and has not fully investigated the managerial and organisational perspectives. In terms of practice, the results give managers an overall interpretation of critical factors, including external and internal factors that might impact an organisation's ISP. The research findings also support managers to better understand the influencing external factors and the key transformational leadership factors that may significantly influence ISP effectiveness. Thus, the research provides organisations an effective strategy for evaluating ISP performance as well as improve IS management.

Chapter 2. Literature Review

Drawing on neo-institutional theory and the transformational leadership framework, this study aims to evaluate the impact of external mechanisms and transformational leadership behaviours on ISP effectiveness in organisations. This chapter discusses about ISP literature, neo-institutional theory, and the transformational leadership framework in order to provide foundational knowledge to inform this study. This chapter is organised as follows: the first section outlines the extent of the literature on IS management and ISP. Then, conceptual and empirical studies on ISP effectiveness are discussed in the second section. The third section reports the theoretical lenses of neo-institutional theory and transformational leadership, their definitions, and their roles in the effectiveness of organisational ISP.

2.1. IS Management and ISP

The following sections present a discussion on IS management and senior management support for ISP. The conceptual and empirical studies of ISP effectiveness are also elaborated in this section.

2.1.1. IS Management

IS has been investigated through different aspects such as IS planning and system risk management, the development and economical values of ISP, and ISP effectiveness (Bulgurcu et al., 2010; Gordon & Loeb, 2002; Hsu et al., 2015; Kankanhalli et al., 2003; Knapp et al., 2007; Straub Jr, 1990). The term IS is defined as the procedures and systems applied to prevent sabotage of organisational information such as access by unauthorised parties or information disclosure and destruction (Hill & Pemberton, 1995). IS management refers to assuring the security of information by effectively managing the IS risks, threats and vulnerabilities (Kritzinger & Smith, 2008). Additionally, previous studies emphasised that IS management is not a one-time activity; instead, an organisation should focus on developing and maintaining IS throughout the lifecycle of the organisation's operational duration (Hill & Pemberton, 1995; Kritzinger & Smith, 2008).

IS management include not only technical components like technology protection and operations but also strategic component made up of leadership and governance; managerial and operational components including security management and organisation, IS policies, IS program management, and user security management (Veiga & Eloff, 2007). Rather than just setting up technical components, the balance between technical and non-technical, such as policies, processes, procedures, standards and people, is necessary and important (Dey, 2007; Kritzinger & Smith, 2008). Efficient IS strategies aligned with an organisation's business strategies can protect and preserve the company data from external and internal threats, maintain organisation's information, and increase economic wealth (Jang-Jaccard & Nepal, 2014; McFadzean et al., 2006; Teh et al., 2015). However, investments in the technological features of IS are often inadequate and it is suggested that organisations thoroughly assess their IS management and apply a comprehensive IS strategy in both technological and managerial contexts (Chang & Lin, 2007; Chen et al., 2012; McFadzean et al., 2006; Seeholzer, 2012; Teh et al., 2015). Various theories and frameworks have been applied in IS studies and have been shown to have significant contributions in explaining the effectiveness of IS management. Organisations can apply the general deterrence theory in setting up disincentives, policies, and sanctions (Kankanhalli et al., 2003; Knapp et al., 2007), adopt the theory of planned behaviour in designing security education, training, and awareness (SETA) programmes that emphasise outcome beliefs (Bulgurcu et al., 2010), or administer institutional theory in motivating senior management to participate in IS management (Barton et al., 2016; Hu et al., 2007). Therefore, maintaining diversity in the selection of IS management instruments is concluded to be valuable in strengthening IS management (Chen et al., 2011; Kankanhalli et al., 2003; McFadzean et al., 2006).

2.1.2. Senior Management Support for ISP

In IS research, the importance of senior management's role in achieving organisational goals has been substantially investigated – for example, in terms of raising employees' awareness, promoting cooperation among employees, and creating effective enforcement policies to maintain employee compliance (Daud et

al., 2018; Hu et al., 2012; Veiga & Eloff, 2007; Von Solms, 2001). For many decades, support from senior managers has been perceived as an essential and necessary factor in security management (Knapp et al., 2007). Senior management support can be described as the extent that top management evaluates the significance of IS functions and the intensity of their actual involvement in supporting IS goals and priorities (Knapp et al., 2007). Empirical research suggests that breaches and violations in IS originate from the inefficiency of ISP development and enforcement, and also from the lack of commitment and involvement of senior managers (Ahmad et al., 2014; Bulgurcu et al., 2010; Chang & Ho, 2006; EY, 2020; ISACA, 2019; Kajtazi et al., 2018; Von Solms, 2001). ISP refers to procedures and policies that are designed to prevent both intended and unintended actions that might harm the digital assets of organisations including stealing organisational data – for example, confidential customer data, company data, and stakeholders’ data – or attacking, sabotaging, and damaging the internal or external network and the organisational information system (Infosys) (Hu et al., 2012). Moreover, ISP enforcement refers to the punishment or sanctioning of ISP violations (Knapp et al., 2006; Knapp et al., 2007).

With effective ISP development and enforcement, managers can optimise the information preservation process and improve the effectiveness of ISP (Knapp & Ferrante, 2012; Knapp et al., 2006). Extant literature suggests four actions to promote IS effectiveness. First, senior managers should develop and install policies related to IS in an organisation. Second, management should ensure employees are notified and educated, especially about the punishments for violations. Third, managers should adopt monitoring tools to enforce these policies and deter potential breaches in the future. Finally, management should continuously control, evaluate, and modify preventive mechanisms to minimise the chance of an IS incident occurring (Knapp et al., 2007; Straub Jr, 1990). Thus, in a recent study, Knapp et al. (2007) highlighted the importance of senior management support in IS effectiveness through the mediator role of end-user training, IS culture, and the relevance and enforcement of ISP in organisations. Furthermore, previous studies in IS have confirmed the role of senior management commitment in developing ISP strategy, controlling ISP enforcement, and accomplishing successful IS management and ISP effectiveness (Barton et al., 2016; Bulgurcu et al., 2010;

Choi, 2016; Hsu et al., 2015; Hu et al., 2012; Hu et al., 2007; Kankanhalli et al., 2003; McFadzean et al., 2006).

Early research of Jarvenpaa and Ives (1991) separated senior management support into two streams: involvement and participation. Involvement refers to the psychological states of executives while participation is actual behaviours, including planning, developing, and implementing IT strategies. Although both involvement and participation benefit IT management, Jarvenpaa and Ives (1991) maintain that the involvement of senior management is more strongly associated with the success of IT management rather than personal participation. Senior management does not have enough time or expertise to deeply participate in actual activities. If senior management spent more time on activities such as developing and evaluating strategies and programmes; communicating, inspiring, and articulating a vision to all employees; and establishing effective controls and enforcing them, IS management would greatly improve (Barton et al., 2016; Choi, 2016; Hu et al., 2012; Jarvenpaa & Ives, 1991).

Employees' actions are shaped by their cognitive beliefs, which are significantly influenced by the recognised behaviours of senior management (Bulgurcu et al., 2010; Hu et al., 2012; Jarvenpaa & Ives, 1991). Through actual actions such as championing, committing, and involving employees in ISP, senior managers could help develop employees' cognitive beliefs and create a fair environment that motivates employees to follow the rules and understand the risk and seriousness of non-compliance activities (Hu et al., 2012), eventually achieving an adequate level of ISP in an organisation.

2.1.3. ISP Effectiveness: Conceptual and Empirical Studies

Previous research has examined ISP effectiveness from both conceptual and empirical aspects based on a variety of theories, including general deterrence theory (D'Arcy et al., 2009; Kankanhalli et al., 2003; Knapp et al., 2007; Mishra et al., 2014; Straub Jr, 1990), criminological theory (Beebe & Rao, 2005; Hu et al., 2012), the theory of planned behaviour (Bulgurcu et al., 2010; Hu et al., 2012), social control theory

(Hsu et al., 2015), and institutional theory (Barton et al., 2016; Hu et al., 2007). Early IS research found that security measures used to achieve effective IS contained deterrents, preventives, motivational factors, and environmental factors (Straub Jr, 1990). IS effectiveness could be ensured with sufficient deterrents and preventives – guidelines and policies that discouraged, deterred, and reduced misuse behaviours – or with an effective environment that provided correct privileges and ensured the high visibility of security administrators (Straub Jr, 1990).

Conceptual studies have adopted general deterrence theory in IS research, utilising disincentives against committing criminal acts (Blumstein, 1978). Disincentives are divided into two aspects: the certainty of sanctions and the severity of sanctions, which both focus on punishment and deterring anti-social acts (Kankanhalli et al., 2003; Straub Jr, 1990). Empirical studies on IS management are generally classified into two streams: (1) research on IS effectiveness via employees' commitment to ISP and (2) research on IS effectiveness via ISP development. The first stream of research seeks to identify the behaviours and the origin of those behaviours in regard to ISP (Bulgurcu et al., 2010; Herath & Rao, 2009; Ifinedo, 2012; Puhakainen & Siponen, 2010; Vance et al., 2012). This approach evaluates employees' compliance with ISP via deterrence theory, protection motivation theory, planned behaviour theory, and rational choice theory and indicates that employees' actions are significantly influenced by factors such as intrinsic and extrinsic motivation (Bulgurcu et al., 2010; Herath & Rao, 2009), coping appraisals such as self-efficacy, and threat appraisals such as deterrent severity and rewards (Bulgurcu et al., 2010; Ifinedo, 2012; Vance et al., 2012). It has been found that employee's intentions are influenced by attitude (determined by the benefit of compliance, cost of compliance, and cost of non-compliance), outcome belief (determined by intrinsic benefit, intrinsic cost, rewards, and sanctions), and self-efficacy. Furthermore, the first approach aims to develop employees' commitment to ISP through the SETA programme, which includes education, training, and coaching; deterrence and enforcement such as formal or informal sanctions; and fear appeals. All these approaches together significantly impact employees' compliance and enhance organisational security culture (D'Arcy et al., 2009; Herath & Rao, 2009; Ifinedo, 2012).

In the second stream of IS management research, studies have conceptualised institutional theory, leadership theory, and the system risk management framework in IS research to measure IS effectiveness and explore the critical and inevitable factors that promote organisational ISP (Chang & Ho, 2006; Choi, 2016; Kankanhalli et al., 2003; Knapp & Ferrante, 2014; Knapp et al., 2007; Moon et al., 2018). Studies have illustrated that ISP effectiveness is significantly influenced by ISP awareness, relevance and enforcement, internal audit, top management support, leadership, and other organisational factors (IT competence, organisational size, industry type, environmental uncertainty). For example, top management support has been found to positively influence the effectiveness of ISP (Kankanhalli et al., 2003; Knapp & Ferrante, 2014; Knapp et al., 2007; Steinbart et al., 2018). Moreover, empirical studies with a technical lens have adapted the system risk management framework and concluded that system auditing significantly affects the effectiveness of IS management (Mishra et al., 2014; Steinbart et al., 2018). Since this study aims to understand IS effectiveness through ISP development, it focuses on the second stream approach.

Findings from extant literature have reported positive, negative, and non-significant correlations between predictive factors and ISP effectiveness. For instance, studies have illustrated that organisational factors such as organisational support, IT competence, organisational size, and industry type have a positive and significant impact on IS management. Furthermore, management mechanisms such as the IS reporting structure, system auditing, workgroup collective administration, knowledge coordination, and the SETA programme have been found to significantly influence IS effectiveness. On the other hand, the role of deterrent severity on ISP effectiveness has been reported as not significant (Kankanhalli et al., 2003). Nevertheless, Beebe and Rao (2005) found that the perceived net benefit of crimes has a negative and significant influence on Infosys security effectiveness. In other words, if employees perceive the costs of non-compliance as higher than the benefits, they tend to comply with ISP.

There are several theoretical foundations used in previous ISP effectiveness studies, including deterrent theory, social alignment theory, integrated knowledge theory, behavioural theory, social control theory, and institutional theory, as well as frameworks/models such as the input-process-output framework, task

interdependence, risk management, and IS management standards. Most theories are related to employees' behaviours and the mechanisms utilised to govern employees' compliance. Based on the literature review of ISP effectiveness studies, there are numbers of variables that can assist future studies in determining the research gap and formulating a theory. Although the role of senior management has been found to significantly influence ISP effectiveness, there is a gap in previous studies regarding the factors that can promote senior management involvement in ISP. A summary of previous ISP effectiveness studies is shown in Table 2.1.

Table 2.1*Summary of ISP Effectiveness Studies*

Authors/ Year	Determinant factors (influencing factors)	Dependent variable	Theoretical foundation	Method	Country/ Region	Main findings
Yoo et al. (2020)	Individual Self-Efficacy (ISE), Workgroup Collective Efficacy (WCE), and Security Knowledge Coordination (SKC)	Workgroup Information Security Effectiveness (WISE)	Input-Process-Output Framework	Quantitative: 1. Field survey 2. Secondary data	South Korea	Positively significant mediator role of WCE and SKC on the relationship between ISE and WISE. Positively significant positive relationship between WCE and WISE. Positively significant relationship between SKC and WISE.
Moon et al. (2018)	Integrated knowledge	Infosys security effectiveness	Relational leadership theory, social alignment theory, and integrated knowledge theory	Quantitative: Survey research	South Korea	Positively significant relationship between integrated knowledge and Infosys security effectiveness.
Steinbart et al. (2018)	IS reporting structure, Internal audit, Top management support	IS effectiveness	System risk management	Quantitative: Survey research	United States	Positively significant relationship between IS reporting structure, internal audit, top management support, and IS effectiveness.
Choi (2016)	Relevance of ISP and Enforcement of ISP	Infosys Security Effectiveness	Transformational leadership framework, deterrence theory	Quantitative: Survey research	South Korea	Positively significant relationship between Relevance of ISP and Infosys Security Effectiveness. Positively significant relationship between Enforcement of ISP and Infosys Security Effectiveness.

Hsu et al. (2015)	Extra-role behaviours, and In-role behaviours.	ISP effectiveness	Behavioural theory, social control theory, and deterrence theory	Quantitative: Survey research	Taiwan	Positively significant relationship between extra-role and in-role behaviours on the effectiveness of ISP.
Knapp and Ferrante (2014)	Top management support, Awareness and training support, and Security culture	IS programme effectiveness	Task interdependence, and institutional theory on ISP	Quantitative: Survey research	United States and Canada	Positively significant mediator role of security culture on the relationship between predictors and ISP effectiveness under low task interdependence environment. Insignificant mediator role of security culture on the relationship between predictors and ISP effectiveness under high task interdependence environment.
Mishra et al. (2014)	Deterrent practices, ISP clarity, and System auditing	Security effectiveness	Deterrence theory, system risk management	Quantitative: Survey research	United States	Positively significant relationship between ISP clarity, system auditing, and ISP effectiveness.
Tu and Yuan (2014)	Organisational support, Organisational awareness, and Security controls development	IS management performance	Critical success factor of IS management	Systematic literature review	-	Positively significant relationship between indicated factors and IS management performance.
Knapp and Ferrante (2012)	ISP management, including ISP awareness, ISP enforcement, ISP maintenance	IS programme effectiveness	Deterrence theory	Quantitative: Survey research	United States	Positively significant relationship between ISP management and ISP effectiveness.
Hagen et al. (2008)	IS measures including ISP, procedures and control, tools and methods, awareness creation	IS effectiveness	Interrelated perspectives on the effectiveness of IS measures	Quantitative: Survey research	Norwegian	Positively inverse relationship between implementation of IS measures and the effectiveness of organisational IS.

Knapp et al. (2007)	Top management support, User training, Security culture, Policy relevance, Policy enforcement	Security effectiveness	Deterrence theory	Quantitative: Survey research	Fourteen countries: e.g., United States, Canada, United Kingdom	Positively significant mediator role of user training, security culture, policy relevance, policy enforcement on the relationship between top management support and security culture.
Chang and Ho (2006)	IT Competence, Environmental uncertainty, Industry type, and Organisation size.	IS management effectiveness	IS management standards BS7799	Quantitative: Survey research	Taiwan	Positively significant relationship between all organisational factors and the effectiveness of IS management.
Beebe and Rao (2005)	Perceived Net Benefits of Crime.	Infosys security effectiveness	Criminological theory	Qualitative: conceptual analysis	-	Negative relationship between perceived net benefits of crime and Infosys security effectiveness.
Kankanha Ili et al. (2003)	Deterrent efforts, Deterrent severity, and Preventive efforts	Infosys security effectiveness	Deterrence theory	Quantitative: Survey research	Singapore	Positively significant relationship between deterrent efforts, preventive efforts, and Infosys security effectiveness. Insignificant relationship between deterrent severity and Infosys security effectiveness.

2.2. Theoretical Lenses: Neo-institutional Theory and Transformational Leadership

This study adopts neo-institutional theory and the transformational leadership framework to better explain the interconnection and role of senior management involvement and ISP enforcement in improving ISP effectiveness in organisations. The neo-institutional and transformational leadership framework are explained in the following sections.

2.2.1. Neo-institutional Theory: Definitions and Mechanisms

Institutional theory has contributed significantly in explaining the importance of institutional environments in organisational decisions, actions, and structures (Mizruchi & Fein, 1999; Suddaby, 2010; Teo et al., 2003; Zucker, 1987). Institution was conceptualised as a system of regulative and constitutive rules that form collective beliefs and understanding of groups (Searle, 1995, 2005); a structure of social rules that regulate social interactions (Hodgson, 2006); or a group of actions and means of actions that are constituted by social norms and rules (Tolbert & Zucker, 1996; Weber et al., 1947). Moreover, North (1991) argued that the roles of institutions are forming as well as formally or informally enforcing the rules of the game, while organisations are the players in that game. Organisational studies indicated that rationalised system build up by social norms and organisational structures and goals were shaped by external audiences and stakeholders (Meyer & Rowan, 1977). In a study on institutional theory, DiMaggio and Powell (1983) explain that “the diversity of organisational forms is isomorphic to environmental diversity” (DiMaggio & Powell, 1983, p. 149). Due to the scarcity of not only resources and customers but also political power and institutional legitimacy, neo-institutional theory postulates that organisations confront external pressures that enforce them to comply with shared norms of appropriate actions if they want to possess social and economic fitness (DiMaggio & Powell, 1983). In other words, firms are affected by elements in the environment and tend to modify themselves according to those elements to survive or succeed (Hu et al., 2007; Meyer & Rowan, 1977).

Neo-institutional theory contains three institutional isomorphisms: coercive, mimetic, and normative isomorphisms, described as external mechanisms that influence the rationality in an organisation (DiMaggio & Powell, 1983; Hu et al., 2007; Meyer & Rowan, 1977). Coercive isomorphisms are both formal and informal pressure from other organisations such as regulation from local government or other professional organisations and networks in the industry (DiMaggio & Powell, 1983). Coercive pressures come from different sources such as governmental regulation, professional associations, parent corporations, or the competitive requirements of the market (DiMaggio & Powell, 1983; Teo et al., 2003; Zucker, 1987). Mimetic isomorphisms refer to “a powerful force that encourages imitation” (DiMaggio & Powell, 1983, p. 151). Mimetic mechanisms manipulate firms to intentionally or unintentionally imitate the actions of other associations perceived to be successful (Guler et al., 2002). In some specific conditions such as poor technology, ambiguous objectives, or a fluctuating and uncertain environment, imitating other external organisations may help them survive with little expense (DiMaggio & Powell, 1983). Normative isomorphisms refer to professionalisation in which a group of members collectively form a cognitive base (DiMaggio & Powell, 1983). Additionally, they are the standards and norms created by different groups which others are forced to follow. Formal education and professional training can work as normative isomorphisms to form an organisational norm. By gathering together similar groups of employees within an organisation, variations and differences in organisational behaviour can be overridden by the same inclinations, tendencies, and stance of these groups (DiMaggio & Powell, 1983). Neo-institutional theory has been popularly and frequently adopted in organisational research to study the external pressures on organisational behaviours (Hassandoust et al., 2020; Liang et al., 2007; Mizruchi & Fein, 1999; Suddaby, 2010).

2.2.2. Senior Management and Neo-institutional Theory in ISP

Senior management commitment helps ensure employees’ compliance with ISP by raising their awareness, promoting cooperation among employees, and having effective enforcement policies (Daud et al., 2018; Kankanhalli et al., 2003; Knapp et al., 2006; Veiga & Eloff, 2007; Wall et al.,

2013). The competence of management level in all departments ranging from IS to non-IS managers plays a crucial role in ISP effectiveness by developing and articulating vision, training and coaching employees on new policies, communicating and motivating commitment, and deterring and punishing behavioural misconduct. Most ISP issues arise from the low-level commitment of all senior management rather than from IS managers alone (Ahmad et al., 2014; Barton et al., 2016; Chang & Ho, 2006; Choi, 2016; Von Solms, 2001).

Senior management committees play the role of middleman in transforming external pressures into organisational objectives and actions based on their assumptions and acceptance of perceived behaviours (Liang et al., 2007). By modifying organisational visions, strategies, values, and culture through procedures, policies, regulations, and sanctions, senior managers effectively develop new ISP that can adapt to the new requirements of the market (Hu et al., 2007). Despite the importance of the senior management level in ISP effectiveness, there has been inadequate attention paid to the factors determining senior management involvement in this process (Johnson, 2009). Johnson (2009) conducted exploratory research that demonstrated critical mechanisms classified as internal and external can motivate the involvement of senior management. However, although both external and internal pressures significantly influence ISP, external influences have been found to be a critical and dominant factor affecting the mediator role of senior management in IS management (Hsu et al., 2015; Hu et al., 2007; Johnson, 2009). As a result, there is a need to investigate the effect of external factors on senior management in motivating them to participate in and promote ISP effectiveness.

Neo-institutional theory has significantly contributed to an understanding of the importance of external mechanisms in organisational decisions, actions, and structures (Mizruchi & Fein, 1999; Suddaby, 2010; Teo et al., 2003; Zucker, 1987). These mechanisms have been confirmed to significantly impact organisational behaviours in different areas of research. For instance, mimetic mechanisms significantly influence website adoption (Flanagin, 2000), IT adoption (Tingling & Parent, 2002), electronic data interchange adoption (Teo et al., 2003), and IT investment decisions (Hu & Quan, 2006). Moreover, Liang and colleagues (2007) determined that coercive and mimetic mechanisms have a significantly positive effect on ERP assimilation,

while Hu and colleagues (2007) demonstrated the contributions of coercive and normative forces on organisational ISP and IS practices. A study by Barton and colleagues (2016) reinforced the finding of Liang and colleagues (2007) that mimetic influences significantly impact senior management beliefs and participation in Infosys security, while Lee and Larsen (2009) found that all three mechanisms influence senior management commitment. Hence, to investigate the relationship between external influences and their impact on the effectiveness of ISP, this study adopts the theory of neo-institutional factors to explain the motivation of senior management in promoting ISP effectiveness.

2.2.3. Transformational Leadership: Definitions and Elements

Over recent decades, leadership traits and effectiveness have gained a great deal of attention in international academic research (Bass, 1985; Bass & Avolio, 1990; Burns, 1978; Nanjundeswaraswamy & Swamy, 2014; Piccolo & Colquitt, 2006). In 1978, Burns (1978) developed the concepts of transactional leadership and transformational leadership, while emphasising the distinction between these two leadership styles (Kevin et al., 2000). Transactional leadership focus on increasing employee collaboration by creating exchanges between leaders and followers. Transactional leaders monitor those exchanges using the “carrot and stick” approach – rewards for good performers and punishment for bad performers. On the other hand, transformational leaders achieve employee cooperation through persuasion, motivation, and inspiration, resulting in trust and respect (Bass, 1985, 1990; Bass & Avolio, 1990; Burns, 1978; Judge & Bono, 2000). Transformational leaders encourage followers to develop beyond their immediate self-interests. They raise employees’ awareness of stakeholders’ interests and well-being as well as organisational and social wealth while pushing them to move from “concerns for existence to concerns for achievement, growth and development” (Bass & Avolio, 1990, p. 22).

However, there also exists complementary integration between those two leadership styles, in that transformational leadership might be ineffective without the existence of transactional leadership (Bass, 1985; Judge & Piccol, 2004; Kevin et al., 2000). Successful transformational leaders might

need to inflate transactional leadership traits in an appropriate context to boost the performance of subordinates while still supporting individual needs and self-interests (Kevin et al., 2000). Transformational leadership contains four elements: *inspirational motivation*, *idealised influence*, *individualised consideration*, and *intellectual stimulation* (Bass, 1985). *Inspirational motivation* refers to the behaviour of articulating an attractive vision, using emotional arguments and demonstrating optimism and enthusiasm to followers. *Idealised influence* requires leaders to be role models in order to gain trust, respect, and confidence from followers. *Individualised consideration* refers to the concentration and attention of leaders on the individual needs of followers. Leaders provide additional support, encouragement, training and coaching facilities to followers to promote their development and raise their confidence to take more responsibility. *Intellectual stimulation* focuses on followers' creativity by encouraging innovative perspectives on old problems, challenging followers' status quo, raising their awareness of issues, and improving problem-solving skills (Bass & Avolio, 1990; Judge & Bono, 2000; Kark et al., 2003). Breaking down those elements into specific behaviours, Podsakoff et al. (1990) outline six critical transformational leadership behaviours: identifying and articulating a vision, providing an appropriate model, fostering the acceptance of group goals, presenting high performance expectations, and providing individualised support and intellectual stimulation. For instance, inspirational motivation can be illustrated by developing, articulating, and inspiring a vision within an organisation. Idealised influence is demonstrated by providing an appropriate model for employees to follow, promoting commitment and fostering the acceptance of group goals, and fostering the belief and trust shown by followers. The transformational leadership framework has drawn a great deal of attention in organisational research and has been applied as the main framework in leadership research (Avolio, 2004; Lowe & Gardner, 2000). A summary of six transformational leadership behaviours is presented in Table 2.2.

Table 2.2*Transformational Leadership Behaviours*

Items	Definition/ Explanation
Identifying and Articulating a Vision	The “behaviour on the part of the leader aimed at identifying new opportunities for his or her unit/division/company, and developing, articulating, and inspiring others with his or her vision of the future” (Podsakoff et al., 1990, p. 112).
Providing an Appropriate Model	The “behaviour on the part of the leader that sets an example for employees to follow that is consistent with the values the leader espouses” (Podsakoff et al., 1990, p. 112).
Fostering the Acceptance of Group Goals	The “behaviour on the part of the leader aimed at promoting cooperation among employees and getting them to work together toward a common goal” (Podsakoff et al., 1990, p. 112).
High Performance Expectations	The “behaviour that demonstrates the leader’s expectation for excellence, quality, and/or high performance on the part of followers” (Podsakoff et al., 1990, p. 112).
Providing Individualised Support	The “behaviour on the part of the leader that indicates that he/she respects followers and is concerned about their personal feelings and needs” (Podsakoff et al., 1990, p. 112).
Intellectual Stimulation	The “behaviour on the part of the leader that challenges followers to re-examine some of their assumptions about their work and rethink how it can be performed” (Podsakoff et al., 1990, p. 112).

2.2.4. Role of Transformational Leadership in Organisations

With effective leadership mechanisms, senior managers can enhance ISP effectiveness and maintain employees’ compliance through sufficient awareness, training, and enforcement (Daud et al., 2018; Knapp et al., 2006; Veiga & Eloff, 2007). However, senior managers do not have any of the direct influence, control, or interaction needed to develop, monitor, and punish all employees that require appropriate leadership to effectively improve IS management (Choi, 2016). As a result of both direct and indirect interaction between leaders and followers, transformational leadership behaviours are correlated with organisational management effectiveness and high employee performance (Dvir et al., 2002; Judge & Piccol, 2004; Kark et al., 2003; Lowe et al., 1996; Podsakoff et al., 1990; Price & Weiss, 2013). Transformational leadership has been recognised by various evaluations – including financial indicators and

performance ranking – to be more effective and efficient than transactional leadership (Bass, 1985, 1990; Judge & Piccol, 2004). Specifically, performance evaluations take into consideration the recognition, commitment, and satisfaction of employees, the trust and belief in the leaders, and the status-quo of followers (Bass et al., 2003; Piccolo & Colquitt, 2006; Walumbwa et al., 2008).

Moving from transactional to transformational leadership, new leadership theory focuses on the interactions between leaders and followers (Jansen et al., 2009). Transformational leadership enhances the relationship between leaders and followers, thereby increasing follower commitment and collective goals achievement, while also preventing counterproductive activities (Kahai et al., 2003). In particular, transformational leaders with soft power bases – “expert, referent, informational power, and legitimacy of dependence” – rather than harsh power bases – “coercion, reward, legitimacy of position, equity, and reciprocity” – elicit significant positive organisational commitment (Pierro et al., 2013, p. 1124). Although several studies have emphasised the importance of employees’ commitment to IS management (Bulgurcu et al., 2010; D’Arcy et al., 2009; Herath & Rao, 2009; Puhakainen & Siponen, 2010; Vance et al., 2012), there is a limited number of studies on the contribution of transformational leadership to effective ISP. Thus, this study adopts the transformational leadership framework to explore how transformational leadership can improve ISP effectiveness through the mediating role of ISP awareness and enforcement.

Chapter 3. Theoretical Framework and Hypotheses

This chapter aims to develop a conceptual model to evaluate the influence of external mechanisms and transformational leadership behaviours on ISP effectiveness. In the following section, the neo-institutional theory and transformational leadership framework are integrated to conceptualise the research model and interpret the relationships between the constructs of the model. Then, the researched hypotheses are constituted and discussed.

3.1. Theoretical Framework

3.1.1. Neo-institutional Theory and ISP Effectiveness

Institutions are defined as the structures of both formal and informal rules that enforce social behaviours (Scott, 2001). Institutional theory explained the role of organisations as the players that are governed and controlled by the set of rules created by institutions (North, 1991). Institutional theory was adopted in different areas of research such as sociology, politics, economics, businesses and organisational analysis (Bjorck, 2004). In other disciplines such as organisational security, institutional theory can be served as an effective tool to analyse IS issues due to its capabilities of explaining the environment consists of social and cultural factors (Bjorck, 2004). Thus, this study applied the institutional theory in studying organisational security.

Neo-institutional theory has contributed a significant explanation for the impact of external forces on organisational decisions and strategies (Mizruchi & Fein, 1999). Based on neo-institutional theory, organisations tend to modify their businesses based on the external environment factors to survive and succeed in the market (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). Nevertheless, external pressures cannot directly influence organisational behaviours without involving the role of human agents inside organisations, that is, senior managers (Liang et al., 2007). Neo-institutional theory emphasises that adjustments in the structure and behaviours of organisations are stimulated by the requirement for organisational legitimacy instead of by the competitive and desirable drive for organisational efficiency (Liang et al., 2007). The need for organisational legitimacy means that organisations seek to make themselves similar to other organisations rather than to be seen as more efficient or effective. Previous research has suggested

that institutional modifications can also be interpreted by the cultural factors within the environment organisations operate in (Suddaby, 2010).

DiMaggio and Powell (1983) developed constructs of neo-institutional theory, including coercive, mimetic, and normative mechanisms that represent the external factors that drive organisational changes and organisational strategy. Coercive isomorphisms refer to both formal and informal forces from governmental regulations, professional associations, and the competitive requirements of the market (DiMaggio & Powell, 1983; Teo et al., 2003; Zucker, 1987). Mimetic mechanisms refer to mimicking the actions of firms to resolve conditions of uncertainty. Normative isomorphisms refer to a collective form of a cognitive base or standards established by organisational groups (DiMaggio & Powell, 1983; Guler et al., 2002).

Neo-institutional theory has been applied to explain the assimilation of different fields of Infosys research ranging from IT adoption to IT investment decisions (Hu & Quan, 2006; Liang et al., 2007; Mizruchi & Fein, 1999; Suddaby, 2010; Teo et al., 2003; Tingling & Parent, 2002; Zucker, 1987). External pressures – coercive, mimetic, and normative mechanisms – have been employed as predictor constructs of organisational assimilation through the mediator role of top management beliefs and participation. For example, Liang et al. (2007) revealed external forces could directly influence the assimilation of the ERP system or indirectly through the mediator role of top management beliefs and participation. In the context of IS, Hu and colleagues (2007) highlight the impact of coercive and normative forces on the assimilation of organisational ISP and IS practices. In a recent study, Hassandoust and colleagues (2020) investigated the role of normative, mimetic, and coercive forces in explaining organisational security compliance and security culture mediated by top management beliefs and the IS knowledge sharing within organisations. Thus, as a result of applying neo-institutional theory in the context of ISP, this study adopted neo-institutional mechanism constructs to explain ISP effectiveness.

3.1.2. Transformational Leadership Framework and ISP Effectiveness

Transformational leadership has gained a lot of attention in organisational research as a way of improving organisational performance and enhancing employees' commitment and compliance

(Dvir et al., 2002; Kark et al., 2003; Price & Weiss, 2013). Transformational leadership is the mechanism through which to motivate followers to achieve beyond expectations while still engaging in a strong emotional connection between leaders and followers (Bass, 1990). Moreover, transformational leadership as a predictor significantly improves leadership effectiveness and organisational outcomes (Judge & Piccol, 2004). Transformational leadership might directly impact organisational citizenship behaviours, which are the voluntary commitments of employees to organisational goals, or indirectly through its effects on mediators such as followers' trust and satisfaction, encouraging them to take on more extra-role behaviours (Podsakoff et al., 1990). Podsakoff et al. (1990) identify six transformational leadership behaviours: articulating a vision, providing an appropriate model, fostering the acceptance of group goals, expressing high performance expectations, providing individualised support, and providing intellectual stimulation. Leaders can gain followers' trust and respect through these transformational leadership behaviours and promote and nurture employees' organisational citizenship conduct, such as going beyond the minimum requirements, taking more responsibility, and preventing problems from occurring (Podsakoff et al., 1990). In the context of IS, Choi (2016) indicates that transformational leadership elements, such as idealised influence, individualised consideration, and inspirational motivation, act as a mechanism to promote Infosys security effectiveness. Thus, emerging from these arguments, this study applies the transformational leadership framework to evaluate the role of transformational leadership behaviours in ISP effectiveness.

3.2. Research Model and Hypotheses

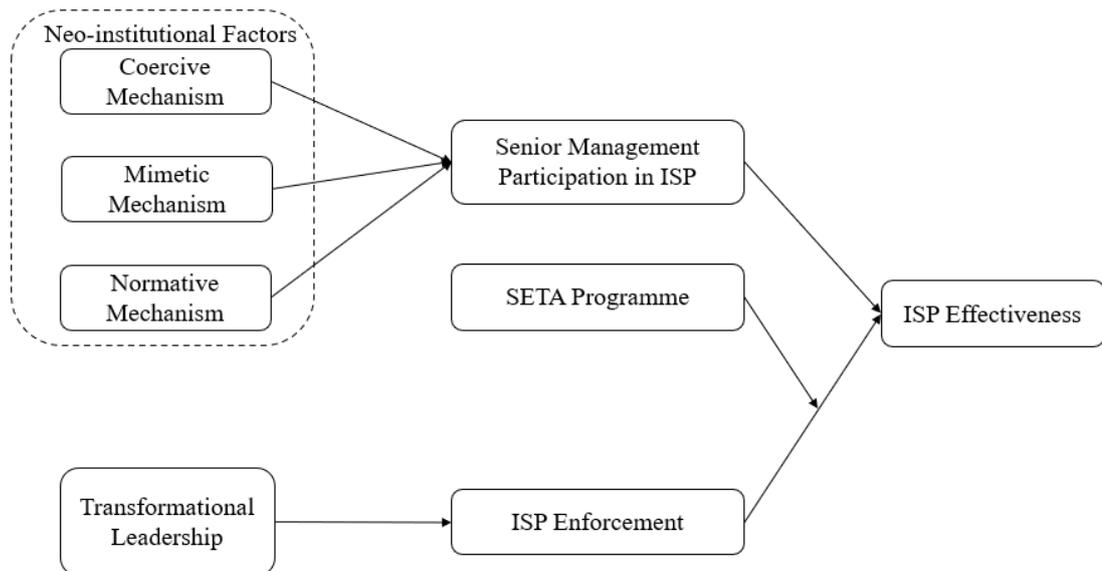
Drawing on the neo-institutional theory and transformational leadership model, this study discusses the hypothesised relationship between external mechanisms, transformational leadership behaviours, ISP enforcement, senior management participation in ISP, and ISP effectiveness.

3.2.1. Research Model

Based on the previous theoretical review, this study proposes a research model in which neo-institutional mechanisms and transformational leadership behaviours are modelled as the antecedents of senior management participation in ISP and ISP enforcement, respectively. Moreover, the influence of senior management participation in ISP and ISP enforcement on ISP effectiveness is examined. This study also evaluates the moderating effect of the SETA programme on the relationship between ISP enforcement and ISP effectiveness. Three control variables (i.e., job tenure and certification of senior managers, and training or educations provided for senior managers) identified in the theoretical framework are included in the research model, as shown in Figure 3.1.

Figure 3.1

Conceptual Model of Study



3.2.2. Neo-institutional Factors and Senior Management Participation in ISP

According to neo-institutional theory, external mechanisms drive organisational behaviours through the mediator role of top management beliefs and participation (Barton et al., 2016; Hassandoust et al., 2020). The external factors and stimuli shape senior managers' beliefs, which in turn guide their behaviours and lead to their involvement in actions such as offering visions,

guidelines, and governance in organisations (Jarvenpaa & Ives, 1991; Liang et al., 2007). For instance, normative mechanisms influence top management's belief in adopting new structures and practices through the establishment of social values, social norms, and professionalisation (Johnston & Warkentin, 2010). The subjective culture of social networks shapes top management beliefs about the standards, benefits, and costs of new practices. Consequently, it motivates managers to participate in driving changes in their organisations (Cavusoglu et al., 2015; Teo et al., 2003). In addition, in some risky and ambiguous situations in the market, mimetic mechanisms stimulate organisations to mimic the practices of other organisations in order to reduce the research costs and gain reputation (Hassandoust et al., 2020; Hwang & Choi, 2017). The empirical evidence also supports that external factors significantly influence senior management participation (Hsu et al., 2012; Hu et al., 2007). In the context of IS, top management's participation mostly depends on their belief in the contribution and value of IS instead of the objective reality. Therefore, to drive IS effectiveness, external mechanisms might shape senior managers' belief in the urgency of IS and encourage them to champion the IS strategy, establish legitimacy, articulate vision, and control compliance (Hu et al., 2007). The extant literature has not fully investigated the effect of external forces on the ISP effectiveness through the mediator role of top management. However, neo-institutional theory postulates that external forces significantly influence senior management participation (Barton et al., 2016; Hu et al., 2007; Liang et al., 2007).

Coercive mechanisms include both formal and informal factors that coerce firms to adopt new procedures and structures to legitimise their organisation in the environment (DiMaggio & Powell, 1983). Coercive forces can come in the form of regulatory agencies that directly require top managers to follow these procedures and structures (Barton et al., 2016; Liang et al., 2007). In developing countries, the influence of government regulation significantly impacts organisational policies and practices (Park & Luo, 2001). Furthermore, organisational practices can be indirectly influenced by business partners or dominant organisations in the industry. Although they do not apply direct pressure, organisations might face indirect coercion based on the relationship with business partners or the competitive requirements of the industry (Cavusoglu et al., 2015; Hassandoust et al., 2020). Therefore, top management actions are required to drive

organisational changes to maintain a good relationship with business partners or gain a competitive advantage in the market. In previous empirical studies, Teo et al. (2003) and Liang et al. (2007) investigated the impact of coercive mechanisms on senior management commitment in the context of electronic data interchange and ERP adoption. In terms of IS assimilation, the effects of coercive pressures were highlighted as positively related to senior management participation (Barton et al., 2016; Hu et al., 2007). Thus, this study expects a positive effect of coercive forces on the participation of senior managers in ISP. I therefore hypothesise:

Hypothesis 1: Coercive mechanisms related to ISP will positively affect senior management participation in ISP.

Mimetic mechanisms have been found to be critical in forming organisational strategies in response to uncertain market conditions or new and undefinable technology (DiMaggio & Powell, 1983). There are two types of mimetic mechanisms: adopting the practices of successful players in the market or adopting general and standardised practices (Teo et al., 2003). Organisations tend to intensively track their competitors' successful actions and perceive them as a foundation for imitation (Haveman, 1993). Top managers are stimulated to mimic their competitors' strategies if they believe there is potential profit for their company in doing so (DiMaggio & Powell, 1983). For example, to reduce barriers to entry, organisations may mimic the actions of the first mover or leading player in the market to reduce their research costs and gain a reputation. (Cavusoglu et al., 2015; Hassandoust et al., 2020). Moreover, the high innovation cost of developing IS strategies and the number of unpredictable security threats motivate senior managers to mimic other organisations' IS practices in order to minimise the uncertainty of a number of conditions and control unexpected outcomes (Hwang & Choi, 2017; Lun et al., 2008). Liang et al. (2007) and Barton et al. (2016) maintain that mimetic forces can directly lead to top management participation through the mediator role of their belief, whereby that belief is translated into actual involvement in the context of ERP and IS assimilation. Therefore, I hypothesise:

Hypothesis 2: Mimetic mechanisms related to ISP will positively affect senior management participation in ISP.

Normative mechanisms relate to the cognitive beliefs of groups that come from sources such as formal education or professional and industrial networks. In other words, through common education and training, a cognitive base is formed that influences both beliefs and participation at the top management level (DiMaggio & Powell, 1983). Normative pressures can be derived from business partners and professional associations (Cavusoglu et al., 2015). Senior managers can assess the perceived benefits and costs of adopting IS practices through observing their customers, suppliers, and stakeholders or attending education programmes, conferences, and workshops (Cavusoglu et al., 2015; DiMaggio & Powell, 1983). Therefore, their cognitive beliefs are assembled and established, which in turn leads to actual involvement (Barton et al., 2016). For example, surveys have shown that many professionals are influenced by the benefits and contributions of IS standards (e.g., ISO 17790 and BS 7799) in building a firm's brand and customer loyalty and organisations are eager to adopt these standards (Cavusoglu et al., 2015). Teo et al. (2003) point out that normative forces originating from the adoption of technology by customers and suppliers could impact the assimilation of that technology. The level of adoption in the market influences organisational norms and senior management's commitment to the standards (Liang et al., 2007; Teo et al., 2003). Furthermore, Barton et al. (2016) highlight the importance of the normative mechanism in the assimilation of Infosys security through the mediator role of senior managers' participation in Infosys security. Therefore, I hypothesise:

Hypothesis 3: Normative mechanisms related to ISP will positively affect senior management participation in ISP.

3.2.3. Transformational Leadership and ISP Enforcement

Transformational leadership has gained substantial attention for its ability to explain the behaviours of subordinates (Lowe & Gardner, 2000; Lowe et al., 1996). Although transformational leadership is more prevalent in the higher level of management, the outcome of such leadership is desirable for every firm (Lowe et al., 1996). Transformational leadership has shown a significantly positive association with organisational commitment, performance, and satisfaction (Niehoff et al., 1990; Podsakoff et al., 1990; Sosik, 1997). According to general

deterrence theory, employees' compliance is controlled by the certainty and severity of punishment (Blumstein, 1978; Kankanhalli et al., 2003). From the ISP perspective, enforcement can be enhanced based on leaders' communication, demonstration, and control regarding punishments for IS violation (Knapp & Ferrante, 2012). Because transformational leadership incorporates both soft power and harsh power bases, followers are inspired to voluntarily participate beyond organisational goals and tend to reduce counterproductive behaviours which leads to higher commitment and compliance (Pierro et al., 2012). Furthermore, empirical research has revealed the mediating effect of employees' trust and satisfaction on the relationship between transformational leadership and both in-role and extra-role behaviours (Podsakoff et al., 1990). Transformational leadership promotes in-role behaviours, which are required acts connected with punishments and rewards. It also stimulates extra-role behaviours defined as employees' citizenship behaviours, which are the spontaneous sense of responsibility and commitment to go beyond organisational tasks and procedures (Podsakoff et al., 1990; Viator, 2001). In the context of ISP, Hsu et al. (2015) found that both in-role and extra-role behaviours positively impact ISP effectiveness. For instance, in-role behaviours are employees' compliance with security policies while extra-role behaviours are voluntary commitment such as promoting ISP awareness, helping and encouraging others, and engaging in developing and improving ISP, which in turn lead to improvement in ISP effectiveness. Moreover, in-role and extra-role behaviours promote employees' commitment, which is critical in IS management and essential in terms of employees' compliance and ISP enforcement (Bulgurcu et al., 2010; D'Arcy et al., 2009; Herath & Rao, 2009; Hsu et al., 2015; Puhakainen & Siponen, 2010; Vance et al., 2012). Thus, in line with these arguments, this study employs a transformational leadership framework to examine the influence of transformational leadership behaviours on effective ISP enforcement in organisations.

Transformational leadership refers to mechanisms through which to encourage, inspire, and develop employees' self-interests to move beyond expectations (Bass, 1985; Bass & Avolio, 1990). Podsakoff et al. (1990) identify six transformational leadership behaviours: *articulating a vision, providing an appropriate model, fostering the acceptance of group goals, expressing high performance expectations, providing individualised support and providing intellectual stimulation*. Transformational leadership elements considered as core behaviours – *articulating a*

vision, providing an appropriate model, fostering the acceptance of group goals – illustrate the actual actions of leaders in the identification of opportunities, the articulation and inspiration of their vision, their specific visualisation and demonstration of real examples that comply with a firm's values, and the promotion of cooperation between stakeholders (Podsakoff et al., 1990). By providing sufficient awareness and understanding of a firm's ISP regarding its visions, values, and benefits, senior managers can educate employees about the benefits of compliance and the certainty and severity of punishments in order to promote their commitment (Beebe & Rao, 2005; D'Arcy et al., 2009; Knapp & Ferrante, 2014). A specific example of compliance and non-compliance with organisational ISP can provide employees with knowledge of the benefits and costs of compliance, with ISP compliance leading to enhanced ISP enforcement in organisations (Daud et al., 2018; Knapp et al., 2006; Veiga & Eloff, 2007). Furthermore, *high performance expectations* reflect a manager's requirement for excellence and a high-performance mindset in an organisation (Podsakoff et al., 1990). Leaders can influence followers' attitudes and perceptions through ISP and by expressing the performance expectations of followers. Followers' awareness of the consequences of organisational behaviours positively affects their security behaviours (Ahmad et al., 2019; Knapp et al., 2007). An effective security monitoring tool is managers' expectation in terms of IS behaviours. Their expectation can develop followers' awareness and responsibility towards excellence and quality (Ahmad et al., 2019). *Providing individualised support* relates to the recognition and consideration of followers' needs and feelings. Individualised support shows that leaders care for both followers' material and spiritual life and give them opportunities to develop and self-actualise (Bass, 1985; Bruch & Walter, 2007; Podsakoff et al., 1990). Transformational leadership behaviours can lead to effective leadership and improve performance through their impact on followers' trust and satisfaction (Judge & Piccol, 2004; Lowe et al., 1996; Podsakoff et al., 1990). Through trust and satisfaction, transformational leaders gain the commitment of followers and can subsequently motivate them to engage in organisational citizenship behaviours (Bass, 1985; Bass & Avolio, 1990; Podsakoff et al., 1990). Specifically, individualised support significantly promotes the citizenship behaviours of altruism and courtesy amongst followers, which involve helping others with organisational tasks and preventing re-occurring problems (Podsakoff et al., 1990; Rafferty &

Griffin, 2004). In addition, *intellectual stimulation* involves leaders' encouragement of followers' creative problem-solving; that is, followers gain awareness of problems and think about them in innovative ways (Bass, 1985; Rafferty & Griffin, 2004). This leads to improvement in the capabilities of followers to conceptualise, analyse, and settle issues, and also optimises their solutions so they are of the best quality (Bass & Avolio, 1990; Rafferty & Griffin, 2004). Although intellectual stimulation might create an ambiguous and stressful environment with a great deal of conflict for followers in the short run, it is expected to be more desirable in the long run when employees work out the clarity of their roles and requirements (Podsakoff et al., 1990). Nevertheless, the most important value of intellectual stimulation is that followers feel valued and that the organisation and leaders appreciate their investment, contributions, and values, thus indicating a positive correlation between intellectual stimulation and organisational commitment (Podsakoff et al., 1990). Therefore, this study expects that senior managers' effective transformational leadership is likely to improve ISP implementation, encourage IS best practices and promote perfect compliance among followers. Thus, it leads to a higher level of enforcement of ISP. As a result, I hypothesise:

Hypothesis 4: Transformational leadership will positively affect ISP enforcement in organisations.

3.2.4. Senior Management Participation, ISP Enforcement, and ISP Effectiveness

ISP is an essential and inevitable factor in sustainable computing services as it protects an organisation's information and prevents financial loss and reputation damage (Feng et al., 2014; Harmon & Auseklis, 2009). The extant literature explains the effectiveness of ISP based on various theories such as general deterrence theory, criminological theory, and social control theory (Bulgurcu et al., 2010; D'Arcy et al., 2009; Hsu et al., 2015; Hu et al., 2012; Kankanhalli et al., 2003; Straub Jr, 1990). Empirical studies have suggested that top management support plays a critical role in IS management and compliance through developing and establishing IS standards, along with gaining employees' awareness and commitment (Knapp & Ferrante, 2014; Knapp et al., 2007; Steinbart et al., 2018). Top management support refers to the critical role of

senior managers in IS activities and their prioritising of IS over other functions in an organisation (Knapp & Ferrante, 2014). Research studies have emphasised the fundamental and essential role of senior managers in IS outcomes through their implementation of security initiatives and their promotion of a security-aware culture to enforce security policies (Knapp & Ferrante, 2014). The effectiveness of IS does not come from technological aspects such as firewalls or anti-virus software, but with top management support (Dutta & McCrohan, 2002). Senior management participation can foster the security culture in an organisation through recognition, support, and sponsorship for IS activities (Knapp et al., 2007). On the other hand, the participation of senior managers also relates to the relationship with stakeholders such as internal audit, IS, and human resource (HR) departments in the promotion of a rigid management environment regarding ISP (Steinbart et al., 2018). According to the theory of planned behaviour, employees' compliance is influenced by the behaviours of senior management (Bulgurcu et al., 2010; Hu et al., 2012; Jarvenpaa & Ives, 1991). Thus, senior management participation works as a mechanism to shape employees' cognitive beliefs, motivate them to achieve the benefits of compliance activities, and voluntarily comply with organisational ISP. Therefore, I hypothesise:

Hypothesis 5: A higher level of senior management participation in ISP will lead to a higher level of ISP effectiveness in organisations.

ISP acts as a controlling factor in an organisation to improve IS. The “fear of sanctions and unpleasant consequences” prevents employees from becoming involved in criminal acts against policies (Knapp et al., 2007, p. 53). General deterrence theory illustrates that employees are deterred from criminal behaviour based on the certainty and severity of punishment (Blumstein, 1978). Thus, to enhance the effectiveness of ISP, organisations should include all desirable goals in standards, rules, and policies in order to control employees' actions, create awareness of negative behaviours, and advance organisational IS compliance (Knapp & Ferrante, 2012). Based on the establishment of ISP, effective monitoring techniques and surveillance programmes can detect and punish negative behaviours and violations, leading to a reduction in repeated acts of violation (Choi, 2016; Knapp & Ferrante, 2012). The act of enforcement creates a positive IS climate that enhances employees' adherence to ISP and encourages their voluntary compliance,

thus reducing the cost of sanctions and the severity of punishments, such as a monetary penalty, demotion, suspension, or firing (Goo et al., 2014; Knapp & Ferrante, 2012; Knapp et al., 2007). ISP enforcement guides employees' perception toward the certainty and severity of punishments, thus restraining them from engaging in deviant activities that target IS while improving ISP compliance and the performance of IS management (D'Arcy et al., 2009; Goo et al., 2014; Knapp & Ferrante, 2012). Knapp and Ferrante (2012) divided the concept of ISP into ISP relevance, ISP enforcement, and ISP maintenance. They indicate that an effective enforcement programme gives employees a clear understanding of the severity of punishment, which in turn leads to a reduction in deviant behaviours and the promotion of IS. I therefore hypothesise:

Hypothesis 6: A higher level of ISP enforcement will lead to a higher level of ISP effectiveness in organisations.

3.2.5. The Moderating Role of the SETA Programme in ISP Effectiveness

The security education and training awareness (SETA) programme has been widely adopted in organisations to promote ISP compliance (Barlow et al., 2018; Chen et al., 2015; D'Arcy & Hovav, 2009; D'Arcy et al., 2009). The SETA programme is effective as it is a control mechanism that reduces IS misuse behaviour while improving security compliance intentions and the security culture of an organisation (Chen et al., 2015; D'Arcy et al., 2009). According to general deterrence theory, security countermeasures reduce the incidence of misuse behaviours by providing offenders with information on the certainty and severity of sanctions (D'Arcy & Hovav, 2009; D'Arcy et al., 2009). The SETA programme can be designed as an IS misuse countermeasure and applied and communicated to employees to reinforce the expectation of compliance and the consequences of IS violations. Based on the active and visible standards in the SETA programme, organisations can discourage a potential abuser from becoming involved in criminal acts by educating them about the perceived benefits of compliance and the perceived costs of non-compliance and violations (Barlow et al., 2018; D'Arcy et al., 2009). The SETA programme can improve compliant behaviours by providing informational communication and normative communication. Informational communication refers to explaining the importance of

policies while normative communication refers to describing the compliant or non-compliant behaviours of other employees (Barlow et al., 2018; D’Arcy et al., 2009). This study maintains that an organisation with a not well-established SETA programme has weaker influences derived from organisational ISP enforcement to promote ISP effectiveness. Thus, I hypothesise:

Hypotheses 7: The SETA programme positively moderates the impact of ISP enforcement on ISP effectiveness.

Table 3.1 presents the proposed research hypotheses for this research.

Table 3.1*Research Hypotheses of this Study*

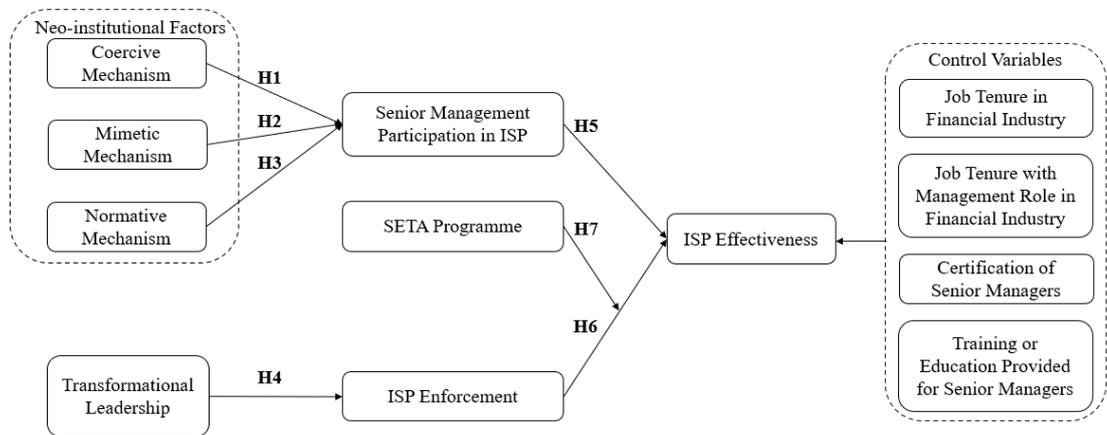
#	Hypotheses
Hypothesis 1	Coercive mechanisms related to ISP will positively affect senior management participation in ISP.
Hypothesis 2	Mimetic mechanisms related to ISP will positively affect senior management participation in ISP.
Hypothesis 3	Normative mechanisms related to ISP will positively affect senior management participation in ISP.
Hypothesis 4	Transformational leadership will positively affect ISP enforcement in organisations.
Hypothesis 5	A higher level of senior management participation in ISP will lead to a higher level of ISP effectiveness in organisations.
Hypothesis 6	A higher level of ISP enforcement will lead to a higher level of ISP effectiveness in organisations.
Hypothesis 7	The SETA programme positively moderates the impact of ISP enforcement on ISP effectiveness.

3.2.6. Control Variables

Previous literature has illustrated that the job tenure of senior managers (Chang & Ho, 2006; Choi, 2016), the certification of senior managers (Choi, 2016; Rohmeyer, 2006), and training and education provided for senior managers (Choi, 2016; Tu & Yuan, 2014) might affect IS compliance and IS effectiveness. In this study, job tenure can be classified into two types: job tenure in the financial industry and job tenure with management roles in the financial industry. Thus, this research expects that these three factors potentially control the effectiveness of ISP. Figure 3.2 highlights the hypothesised relationship between constructs and control variables in this study.

Figure 3.2

Research Model and the Hypothesised Relationships



Chapter 4. Methodology

This chapter presents a comprehensive discussion of the design and methodology of this research adopted to evaluate the theory-based formulated research model. The research design, data collection approach, and data analysis technique will be discussed in this chapter.

4.1. Research Design

According to Crotty (1998) and Gray (2004), the interrelationship between the researcher's epistemology perspective and the theoretical viewpoint of the research, methodology, and methods can affect the research design process. Epistemology provides the researcher with the philosophical background to determine the theory of knowledge and the theoretical stance required when studying phenomena, while methodology refers to the strategy of investigating a research question to provide an outcome (e.g., phenomenological research, experimental research, and survey research), and methods refer to actions and approaches (e.g., interview, observation, and questionnaire) (Creswell, 2009; Gray, 2004; Leavy, 2017).

In philosophy, ontology is the study of being with a focus on understanding "what is" knowledge while epistemology aims to understand "what it means to know" (Gray, 2004, p. 16). Ontology relates to assumptions of reality and its essential characteristics (Blaikie, 2000; Bryman & Bell, 2007). Ontology can be illustrated as a set of principles or beliefs that demonstrates a personal explanation of any facts in the world. There are two main categories of ontology: realism and relativism. Realism can be described as the independent existence of entities. The typical characteristic of realism is the rejection of the belief that humans have precise knowledge of the world and an emphasis on the independence of realities and the human mind (Phillips, 1987; Putnam, 1999; Sayer, 2000). In contrast, relativism focuses on the fact that individuals and their assessments construct realities and that there are subjective differences from person to person (Bryman & Bell, 2007; Guba & Lincoln, 1994). Thus, the ontology of this research is realism according to the independence of the object from the researcher, emphasised by the research problem which seeks to examine the relationship between neo-institutional theory and

transformational leadership, and the effectiveness of information security policies (ISP). Furthermore, epistemology refers to the view that our explanation of this world is a combination of our knowledge, perspectives, and viewpoint (Putnam, 1999; Sayer, 2000). Epistemology contains three main categories: objectivism, constructivism, and subjectivism. Objectivism claims that truth or social phenomena are separate from social factors while constructivism states that truth does not independently exist, and humans build up knowledge by experiences and their interaction with the external world. Subjectivism maintains that truth only exists in the human mind, which means that the interpretation of facts is highly dependent on the receiver's mental choices, biased attendance, or feelings (Bryman & Bell, 2007; Peikoff, 1991; Putnam, 1999; Sayer, 2000). The epistemology of this study is objectivism because instead of including the researcher's values, the focus of this research is to find out the objective truth regarding the impact of neo-institutional theory and transformational leadership elements on the effectiveness of ISP.

4.1.1. Research Paradigm

The first requirement when designing research is to identify the research paradigm (Creswell, 2009; Leavy, 2017). The research paradigm refers to “the basic belief system or worldview that guides the investigator, not only in choices of methods but in ontologically and epistemologically fundamental ways” (Guba & Lincoln, 1994, p. 105). There are four types of research paradigms: positivism, postpositivism, critical theory, and constructivism (Guba & Lincoln, 1994). Critical theory refers to historical realist ontology while constructivism is based on relativist ontology. Both philosophical research paradigms follow a transactional and subjectivist epistemology. Reality under the critical theory paradigm is assumed to be constructed and influenced by the investigator and social factors (Guba & Lincoln, 1994). Likewise, constructivism rejects the independent existence of truth. Both critical theory and constructivism emphasise the dependence of investigators on reality. Their approach to studying a phenomenon is to use qualitative methods to generate or develop a theory rather than testing a hypothesis (Creswell, 2009; Guba & Lincoln, 1994, 2005).

Positivism is based on a realist ontology with a dualist and objectivist epistemology. Positivists assume that there is only one reality and the investigated object independently exists without any influences from the investigator (Creswell, 2009; Guba & Lincoln, 1994, 2005). In other words, the process of studying phenomena must be conducted objectively without any participation of the researcher in order to get rid of biases. A positivist methodology is experimental and manipulative and uses quantitative methods to confirm predetermined hypotheses (Guba & Lincoln, 1994). Postpositivism, however, assumes that an imperfect reality exists due to flawed human intellectual mechanisms. Postpositivism is based on a critical realist ontology and a modified objectivist epistemology which asserts that there is no optimal way to determine the truth; instead, the research objective is to use strengths to minimise weaknesses (Creswell, 2009; Guba & Lincoln, 1994, 2005). According to Kivunja and Kuyini (2017), a positivist paradigm views truth or knowledge as already existing and truth can be discovered by formulating and testing a hypothesis. This differs slightly from the postpositivist paradigm which views researchers' errors as impediments to determining the real truth. The postpositivist paradigm is regarded as a better guide for this research as its objectives are to generate hypotheses based on theory and to collect data to support or reject them (Creswell, 2009; Guba & Lincoln, 1994; Leavy, 2017). Thus, this research adopts the postpositivist paradigm with a quantitative approach to test the formulated hypotheses.

4.2. Data Collection Approach

4.2.1. Survey Method and Sampling

As stated earlier, postpositivism refers to independent reality and is based on “probability testing and building evidence to reject or support hypotheses” (Leavy, 2017, p. 92). From a theoretical perspective, postpositivist research aims to investigate the causal relationship between constructs by formulating a theory and using a quantitative methodology and methods to prove the predetermined theoretical proposition. There are two primary quantitative designs: experimental and survey research (Creswell, 2009; Leavy, 2017). Experimental research refers to true experiments such as selecting a research subject, taking deliberate action, and observing the result

to confirm a hypothesis based on cause-and-effect logic (Leavy, 2017). On the other hand, survey research is more popularly used in social science research to investigate a population based on its sample characteristics. The survey research technique involves asking standardised questions, collecting subjective or objective data, and statistically analysing the data to confirm a hypothesis (Leavy, 2017).

This study seeks to investigate the correlations between neo-institutional mechanisms, transformational leadership behaviours and the effectiveness of ISP. Therefore, the survey method was regarded as appropriate for this research for the following reasons. The survey method is preferable in testing hypotheses without variable manipulation (Newsted et al., 1998). Additionally, survey research supports researchers in finding out the characteristic of a population by statistically generalising data from a group of samples. This refers to the empirical testing of constructs to determine the true relationships between established constructs (Malhotra & Grover, 1998; Newsted et al., 1998). The quantitative survey approach supported this study by providing a generalisable picture of ISP effectiveness explained by neo-institutional theory and transformational leadership. Survey research contains two types: explanatory and exploratory survey research (Malhotra & Grover, 1998). The exploratory survey research is used to familiarise the researcher with the research topic while the explanatory survey research is more applicable in investigating the causal relationship between constructs (Malhotra & Grover, 1998). Thus, the explanatory (causal) survey approach was applied in this study to test the theory and hypotheses related to the impact of neo-institutional theory and transformational leadership behaviours on ISP effectiveness.

There are two methodologies in survey research: cross-sectional design and longitudinal design (Leavy, 2017). A cross-sectional design is adopted to collect numeric data at one point of time with closed-ended questions while a longitudinal design focuses on multiple items at a changing point in time. A cross-sectional design is more about finding the pattern of the population while a longitudinal design focuses more on changing phenomena (Leavy, 2017). The cross-sectional design was employed in this research to gather sample data at one point of time in order to study the population's characteristics (Leavy, 2017). In a survey approach, the characteristics of a

population are drawn from the data collected from the sample and statistically analysed to answer the research question (Malhotra & Grover, 1998). The population of this research is management-level professionals who are aware of or in charge of security-related policies in financial institutions (e.g., banks) in Vietnam. The primary technique of survey research is a questionnaire (Leavy, 2017). In this study, questionnaire items were created based on the measurement items of previous research. Due to the high-level of respondents who were senior managers in banks and financial firms and the limited accessibility to these respondents, the sample was selected by convenience and accessibility sampling. A sample size of 200 was selected. In statistics, effect sizes refer to quantitative measures of relationship and correlation between constructs. This sample was deemed appropriate for exploratory research and reliable in identifying strong, medium, and no effect sizes by using the partial least squares (PLS) method (Goodhue et al., 2006). The survey delivery method was an online survey operated on the Qualtrics platform provided by AUT. In the data collection process, human resources (HR) managers from financial firms in Vietnam were attempted and requested to share the survey link with their organisation's managers who were aware of or in charge of ISP in their organisation.

4.2.2. Measurement Items Development

Questionnaire construction is “the heart of survey research” (Leavy, 2017, p. 103). In this study, the measurement items applied in question construction were adopted and modified from the validated items of previous studies to match with this study's situation. Researchers argue that there are advantages in adopting items from previous studies in terms of quality, reliability and validity (Bryman & Bell, 2007). Thus, the measurement items of this research were established by utilising multiple item constructs operationalised from previous studies. According to Neuman (2011), the Likert scale is popularly used in survey research, requiring respondents to express their agreement or attitudes towards a statement in ordinal-level categories. In this survey research, a seven-point Likert scale (strongly disagree, disagree, somewhat disagree, neither agree nor disagree, somewhat agree, agree, and strongly agree) was adopted in the measurement items of the mentioned constructs except the normative mechanism which was assessed by a five-point

Likert scale (very low, below average, average, above average, very high). A seven-point Likert scale helps to provide a greater variety of choices and meet the objective reality of respondents (Joshi et al., 2015). Furthermore, optimal reliability can be achieved with a seven-point scale as the need for improvement in reliability is very small compared to the effort spent on a higher item scale (Matell & Jacoby, 1971).

In econometrics and social science research, endogenous variables are called “jointly determined variables” that “have outcome values determined within the model” (Lewis-Beck et al., 2004, p. 849). In other words, in a causal system, this can be explained by joint interaction among variables. On the other hand, an exogenous variable is an independent factor in a causal system whose value is controlled by factors outside the causal system being studied. Its contribution is to help determine the value and explain the nature of an endogenous variable (Lewis-Beck et al., 2004). In this study, the model consists of nine exogenous (independent) variables, three endogenous (dependent) variables, and one moderator variable. The measurement items of three exogenous variables of neo-institutional theory – coercive, mimetic, and normative mechanisms – and the endogenous variable of senior management participation were adapted from Liang et al. (2007). Transformational leadership is a reflective second-order construct and the items used to measure its six factors – articulate vision, provide model, fostering acceptance, high-performance expectation, individualised support, and intellectual stimulation – were adapted from Viator (2001). The items from a study by Chen et al. (2015) were used to measure the moderator variable of the SETA programme. The measurement items used to measure the endogenous construct of ISP enforcement and ISP effectiveness were adapted from Knapp et al. (2006) and Hsu et al. (2015), respectively. Table 4.1 illustrates the measurement items for this research.

Table 4.1*Measurement Items*

Construct	Item Names	Measurement items	Reference
Coercive Mechanism	COER1	The local government requires our organisation to use ISP	(Liang et al., 2007)
	COER2	The industry association requires our organisation to use ISP	
	COER3	The local competitive conditions require our organisation to use ISP	
Mimetic Mechanism	MIM1	Our main competitor who has adopted ISP have greatly benefitted	(Liang et al., 2007)
	MIM2	Our main competitor who has adopted ISP are favourably perceived by others in the same industry	
	MIM3	Our main competitor who has adopted ISP are favourably perceived by their suppliers and customers	
Normative Mechanism	NORM1	Please indicate the extent of ISP adoption by your organisation's suppliers	(Liang et al., 2007)
	NORM2	Please indicate the extent of ISP adoption by your organisation's customers	
	NORM3	Please indicate the extent to which the government's promotion of ISP influences your organisation to use	
Senior Management Participation in ISP	PART1	The senior management of our organisation actively articulates a vision for the organisational use of ISP	(Liang et al., 2007)
	PART2	The senior management of our organisation actively formulated a strategy for the organisational use of ISP	
	PART3	The senior management of our organisation actively established goals and standards to monitor the use of ISP	
Articulate Vision	ARTI1	I create an interesting picture of the future for our organisation's ISP practice area	(Viator, 2001)
	ARTI2	I have a clear understanding of where we are going in terms of ISP	
	ARTI3	I inspire other employees with my ISP related plans for the future of our organisation	
	ARTI4	I am able to get other employees committed to my ISP related dream of the future of our organisation	
	ARTI5	I am always seeking new opportunity to improve our organisation's ISP	
Provide Model	PROV1	In terms of ISP compliance, I lead by "doing" rather than "telling".	(Viator, 2001)
	PROV2	In terms of ISP compliance, I lead by examples and best practices	
	PROV3	In terms of ISP compliance, I provide a good model for other employees to follow.	
Fostering Acceptance	FOST1	I foster collaboration between my team and information security team.	(Viator, 2001)

	FOST2	I develop team attitude and spirit among employees in order to comply with ISP.	
	FOST3	I encourage employees to be "team player" in relation to ISP compliance	
	FOST4	I encourage all teams to work together for the same goal towards ISP compliance.	
High Performance Expectation	HIGH1	I show employees that I expect a lot from them regarding ISP compliance	(Viator, 2001)
	HIGH2	I insist only on the best performance (zero ISP non-compliance)	
	HIGH3	I will not settle for the second best when it comes to ISP compliance	
Individualised Support	INDIV1	I respect my employees' feelings regarding ISP related activities	(Viator, 2001)
	INDIV2	I behave in a way that is thoughtful of my employees' personal needs regarding ISP related activities	
Intellectual Simulation	INTEL1	I provide my employees with new ways of approaching ISP issues to make them think about possible solutions	(Viator, 2001)
	INTEL2	I force my employees to rethink some of their ISP related ideas.	
ISP Enforcement	ENFO1	Employees caught violating ISP are appropriately corrected	(Knapp et al., 2006)
	ENFO2	Information security rules are enforced by sanctioning the employees who break them	
	ENFO3	Repeat security offenders are appropriately disciplined	
	ENFO4	Termination is a consideration for employees who repeatedly break security rules	
SETA Programme	SETA1	In my organization, employees are briefed on the consequences of modifying organisation's data in an unauthorized way.	(Chen et al., 2015)
	SETA2	My organization educates employees on their information security responsibilities.	
	SETA3	In my organization, employees are briefed on the consequences of accessing information systems that they are not authorized to use.	
ISP Effectiveness	EFFE1	The ISP achieves most of its goals.	(Hsu et al., 2015)
	EFFE2	The ISP accomplishes its most important objectives.	
	EFFE3	Generally speaking, information in our organisation is sufficiently protected.	
	EFFE4	Overall, the ISP is effective in our organisation.	
	EFFE5	The information security program (policy) has kept our organisation's security losses to a minimum.	

Common method variance (CMV) is a big concern in survey-based research due to the invalidity of scores derived from the measurement method (Jarvis et al., 2003). Common method bias (CMB) refers to the gap between the trait score and the measured score of that trait because of using a common method including more than one measurement that results in specious

covariance. CMB indicates the origin of systematic measurement error that might affect a study's validity (Malhotra et al., 2006). There are four approaches to address the issue with CMV. First, the traditional multitrait-multimethod (MTMM) procedure requires the use of multiple methods to measure each trait (Malhotra et al., 2006). It refers to approaches that design the data collection process to "obtain measures of the predictor and criterion variables from different sources" (Podsakoff et al., 2003, p. 887). Second, the modern MTMM technique uses confirmatory factor analysis (CFA) to solve the problem of traditional MTMM, which does not offer an accurate assessment of CMV (Malhotra et al., 2006). CFA analysis accurately measures the unbiased relationship between latent constructs. Third, Harman's single-factor test expects all items loaded into exploratory factor analysis and assumes CMV exists if "(1) a single factor emerges from unrotated factor solutions, or (2) a first factor explains the majority of the variances in the variables" (Malhotra et al., 2006, p. 1867). However, it faces the disadvantage of insufficient sensitivity to detect CMV with an increasing number of latent factors. Fourth, the marker variable test adds an unrelated construct to the model. Subsequently, CMV can be assessed by ensuring there is no relationship between the marker variable and other variables in the model (Malhotra et al., 2006). The marker variable of this study is the Vietnam airline's brand image variable, which was measured by a multiple-item scale and theoretically not correlated to other constructs. Thus, it was applied in this study to control CMV and reinforce discriminant validity.

To fine-tune the survey, a pre-test and pilot study were applied to examine and refine the final questionnaire and its instruments (Straub et al., 2004). The pre-test study was conducted with several experts, who were professional managers working in the financial industry in Vietnam, to verify the understandability of the questionnaire. Adjustment and modification were made based on the experts' comments on the Vietnamese words used in the survey. The pilot study was completed with more than 30 respondents who were managers working in the financial industry in Vietnam and aware of or in charge of the information security policy in their organisation. The reliability and validity test of the constructs was tested using PLS-SEM. According to the pilot test, all the constructs passed the reliability and validity test, making them appropriate constructs for the main survey study.

4.2.3. Ethical Considerations

Several ethical considerations require researchers' attention before conducting research. First, one of the most important ethical consideration is confidentiality (Corti et al., 2000; Kaiser, 2009; Wiles et al., 2008). Participation in this study was voluntary and respondents' information was not disclosed at any time. The gathered data was only used for the research purpose. This not only reduced the risk of information leakage that might damage a company's well-being but also helped participants feel comfortable answering the questions (Singer et al., 1995). Second, respondents were sent a participant information sheet in Vietnamese that provided details of the study (e.g., purpose, potential risks, and benefits). The participants were informed that the results of the research would be used for academic purposes only. According to AUTECH, all research study needs to emphasise partnership, participation, and protection. Therefore, all the rights and benefits of respondents were ensured in this research. The ethics approval letter and the participant's information sheet (in both English and Vietnamese) are attached in Appendices A and B.

4.3. Data Analysis Technique

The dataset of this research was analysed based on Structural Equation Modeling (SEM) due to its ability to process multivariate statistical analyses to explore the multiple relationships between variables (Gefen et al., 2011; Hair et al., 2016). There are two main statistical methods for SEM: covariance-based SEM (CB-SEM) and PLS-SEM. There are some benefits of using PLS-SEM rather than CB-SEM such as its focus on prediction and explanation of the constructs' variance through other explanatory constructs rather than confirming a theory. The objective of PLS-SEM is to maximise the explanatory power (R^2 value) of the dependent constructs (Hair et al., 2016; Hair et al., 2012). Moreover, there is no requirement for large sample size, normal distribution data, or goodness-of-fit criterion in PLS-SEM, compared to CB-SEM in which the failure of assumptions might lead to an extremely inaccurate result. PLS-SEM is also preferred when handling a large and complex model with many latent variables (Hair et al., 2016; Hair et al., 2011; Hair et al., 2012; Henseler & Fassott, 2010; Henseler et al., 2009). Additionally, PLS-SEM

has advantages over CB-SEM in its use of a continuous moderator variable using multi-item scales (Matthews et al., 2018).

This study evaluates the impact of neo-institutional mechanisms on the effectiveness of ISP through the mediating effect of senior management participation in ISP. It also examines the influence of transformational leadership behaviours in the effectiveness of ISP mediating by ISP enforcement. Therefore, it more focuses on evaluating and discovering the relationship between constructs rather than testing or confirming a theory, which makes the use of PLS-SEM more beneficial than CB-SEM (Hair et al., 2016).

Furthermore, this study's research model contains 13 latent variables including one moderator variable, which can be considered too large and complex for the use of CB-SEM (Henseler & Fassott, 2010; Henseler et al., 2009; Matthews et al., 2018). Therefore, this study employed PLS-SEM as the statistical method in examining the research model and measurement items and analysing the data.

Chapter 5. Data Analysis and Findings

This chapter presents the findings from the data analysis that utilised the PLS-SEM tool. The first section reports the measurement scales of this study. The second section illustrates the descriptive statistics of respondents' profile and the measurement instruments. The third section discusses and evaluates the measurement model in terms of reliability and validity including internal consistency reliability, indicator reliability, convergent validity, and discriminant validity. The fourth section validates the structural model by examining the R^2 values and path coefficients. The mediation and moderation effects are evaluated and the hypothesised relationships between constructs are reported. The control variables' effects and common method bias are also addressed in this chapter.

5.1. Measurement Scales

The process of naming the measurement scales model of this study is presented in this section. Thirty-one items were adopted in the survey as follows: coercive mechanism (3 items), mimetic mechanism (3 items), normative mechanism (3 items), senior management participation in ISP (3 items), articulate vision (5 items), provide model (3 items), fostering acceptance (4 items), high performance expectation (3 items), individualised support (2 items), intellectual stimulation (2 items), ISP enforcement (4 items), SETA programme (3 items), and ISP effectiveness (5 items).

5.2. Descriptive Statistic

The participants' demographic profiles along with the measurement instruments were collected in the survey. This section reports the demographic profile of respondents and the descriptive statistics of the measurement items.

5.2.1. Demographic Profile of Respondents

The survey gathered respondents' demographic information, including gender, age, organisational position, education level, job tenure, certification related to information security, and training and education. A summary of the descriptive statistics of the demographic profile of respondents is reported in Table 5.1.

Out of 207 respondents, 90 (43.5%) were male, 93 were female (44.9%) and 24 respondents preferred not to state their gender (11.6%). In terms of age, 48.3% of respondents were aged between 31-40, 32.4% were aged between 41-50, 12.1% were aged between 21-30, 6.8% were aged over 50, and 0.5% were aged less than 20. Most of the respondents were IT managers (25.1%), followed by those who were CISOs (chief information security officers) (19.3%). In the remainder, 15.9% were security managers, 13.5% were chief information officers (CIOs), 13% were chief executive officers (CEOs), and the remainder were from other management positions in financial firms such as chief internal audit officers, chief accounting officers, chief financial officers, and risk managers. Most of the respondents had achieved a postgraduate/master level degree or higher (72.9%), followed by those who had achieved a bachelor's degree (24.6%). In the remainder, 1.4% had achieved a college degree and 1.0% had achieved a high school diploma. Over 42% of respondents had worked for financial firms for 5-10 years, 26.6% had held a 1-5-year tenure, 19.3% had held a 10-15-year tenure, 9.2% had held a tenure for more than 15 years, and the remainder had held a tenure for less than 1 year in a financial firm. In terms of management positions in financial firms, 54.6% of respondents had held a 1-5-year tenure, 23.2% had held a 5-10-year tenure, 9.2% had held a 10-15-year tenure, 11.1% had held a tenure for less than 1 year, and the remainder had held more than a 15-year tenure. Regarding certificates related to IS, most of the respondents had 3 certificates (19.8%), 18.8% had 2 certificates, 15% had 1 certificate, 33.8% did not have any certificate, 7.7% had 4 certificates and the rest had 5 certificates. Finally, in terms of annual training or education related to IS, 50.7% had 1-5 training or education sessions per year, 23.7% had 5-10 training or education sessions per year, 15.5% had more than 10 training or education sessions per year, and 10.1% did not have any annual training or education sessions.

Table 5.1*Participants' Demographic Information*

Demographic Information		Frequency	Percentage
Gender	Male	90	43.5%
	Female	93	44.9%
	Prefer not to say	24	11.6%
Age	Under 20 years	1	0.5%
	21-30 years	25	12.1%
	31-40 years	100	48.3%
	41-50 years	67	32.4%
	Above 50 years	14	6.8%
Role (Organisational Position)	Chief Executive Officer	27	13.0%
	Chief Information Officer	28	13.5%
	Chief Information Security Officer	40	19.3%
	A manager in IT department	52	25.1%
	A manager in Security department	33	15.9%
	Other types of manager	14	6.8%
	Other - Please specify	13	6.3%
Education Level	High School Diploma	2	1.0%
	College	3	1.4%
	Bachelor	51	24.6%
	Postgraduate/Master or above	151	72.9%
Job Tenure in Financial Industry	Less than 1 year	5	2.4%
	1-5 years	55	26.6%
	5-10 years	88	42.5%
	10-15 years	40	19.3%
	More than 15 years	19	9.2%
Job Tenure with Management role in Financial Industry	Less than 1 year	23	11.1%
	1-5 years	113	54.6%
	5-10 years	48	23.2%
	10-15 years	19	9.2%
	More than 15 years	4	1.9%
Number of Certificates Related to IS	0 certificate	70	33.8%
	1 certificate	31	15.0%
	2 certificates	39	18.8%
	3 certificates	41	19.8%
	4 certificates	16	7.7%
	5 certificates	10	4.8%
Number of Training or Education Sessions Related to IS per Year	0 training or education	21	10.1%
	1-5 training or educations	105	50.7%
	5-10 training or educations	49	23.7%
	More than 10 training or educations	32	15.5%

5.2.2. Descriptive Statistics of Measurement Items

The descriptive statistics of measurement items including mean and standard deviation were analysed by SPSS version 26 and reported. Table 5.2 shows the descriptive statistics for all constructs and indicators.

Table 5.2

Descriptive Statistics for the Measurement Items

Constructs	Indicators	Mean	Std. Dev
Coercive Mechanism	COER1	6.08	1.086
	COER2	6.14	0.989
	COER3	6.22	0.918
Mimetic Mechanism	MIM1	6.23	1.001
	MIM2	6.24	0.876
	MIM3	6.30	0.950
Normative Mechanism	NORM1	3.66	0.772
	NORM2	3.59	0.813
	NORM3	3.69	0.872
Senior Management Participation in ISP	PART1	6.27	0.889
	PART2	6.31	0.854
	PART3	6.29	0.879
Articulate Vision	ARTI1	6.03	1.142
	ARTI2	6.14	0.946
	ARTI3	6.22	0.939
	ARTI4	6.18	1.001
	ARTI5	6.21	1.005
Provide Model	PROV1	6.27	0.909
	PROV2	6.23	0.856
	PROV3	6.32	0.912
Fostering Acceptance	FOST1	6.03	1.074
	FOST2	5.97	1.165
	FOST3	6.09	1.124
	FOST4	6.14	1.086
High Performance Expectation	HIGH1	6.20	1.037
	HIGH2	6.22	1.091
	HIGH3	6.28	0.993
Individualised Support	INDIV1	4.70	1.372
	INDIV2	4.71	1.409
Intellectual Stimulation	INTEL1	5.76	1.295
	INTEL2	5.80	1.377
ISP Enforcement	ENFO1	6.11	1.101

	ENFO2	6.20	0.829
	ENFO3	6.36	0.811
	ENFO4	6.35	0.828
SETA Programme	SETA1	6.12	1.022
	SETA2	6.19	1.018
	SETA3	6.21	1.016
ISP Effectiveness	EFFE1	6.20	1.008
	EFFE2	6.20	0.874
	EFFE3	6.25	1.026
	EFFE4	6.27	0.961
	EFFE5	6.31	0.962

5.3. Measurement Model Assessment

Smart PLS 3.0 professional was used to analyse the measurement and structural model of this study. The reliability and validity of the measurement model were assessed by internal consistency reliability, indicator reliability, convergent validity, and discriminant validity of the measurement items (Chin, 2010; Hair, 2014). Then, the transformational leadership construct which was modelled as a second-order reflective-reflective construct was assessed, as presented in the following section (Hair, 2014).

5.3.1. Internal Consistency Reliability

Internal consistency reliability is the initial criterion to assess a reflective measurement model. A composite reliability (CR) that is higher than the threshold value of 0.7 can be regarded as satisfactory (Chin, 2010; Hair, 2014). Table 5.3 reports the descriptive statistics and the CR value of all first-order constructs in the research model. The CR of all constructs ranged from 0.87 to 0.96, which was above the accepted threshold value of 0.7. This indicated that all constructs were reliable and had satisfactory internal consistency reliability (Gefen et al., 2000).

Table 5.3*Descriptive and Reliability Statistics for Reflective Constructs*

Constructs	Indicators	Factor Loadings	Std. Dev	T-statistics
Coercive Mechanism CR = 0.90	COER1	0.89***	0.03	35.29
	COER2	0.84***	0.04	21.93
	COER3	0.88***	0.03	35.43
Mimetic Mechanism CR = 0.91	MIM1	0.92***	0.01	69.39
	MIM2	0.84***	0.04	20.80
	MIM3	0.92***	0.02	45.67
Normative Mechanism CR = 0.90	NORM1	0.90***	0.18	5.12
	NORM2	0.86***	0.26	3.30
	NORM3	0.83***	0.22	3.83
Senior Management Participation in ISP CR = 0.87	PART1	0.83***	0.04	21.94
	PART2	0.75***	0.07	10.44
	PART3	0.90***	0.02	54.06
Articulate Vision CR = 0.93	ARTI1	0.83***	0.03	24.64
	ARTI2	0.83***	0.03	26.25
	ARTI3	0.87***	0.03	30.56
	ARTI4	0.87***	0.02	37.43
	ARTI5	0.84***	0.04	20.02
Provide Model CR = 0.89	PROV1	0.84***	0.03	27.31
	PROV2	0.80***	0.04	22.22
	PROV3	0.90***	0.02	40.03
Fostering Acceptance CR = 0.95	FOST1	0.90***	0.02	44.14
	FOST2	0.88***	0.03	25.90
	FOST3	0.90***	0.02	37.28
	FOST4	0.93***	0.02	60.98
High Performance Expectation CR = 0.92	HIGH1	0.85***	0.05	17.36
	HIGH2	0.88***	0.02	41.98
	HIGH3	0.92***	0.02	51.84
Individualised Support CR = 0.96	INDIV1	0.97**	0.38	2.60
	INDIV2	0.95**	0.38	2.49
Intellectual Stimulation CR = 0.95	INTEL1	0.95***	0.01	81.57
	INTEL2	0.96***	0.01	96.71
ISP Enforcement CR = 0.93	ENFO1	0.81***	0.06	13.63
	ENFO2	0.84***	0.04	23.64
	ENFO3	0.86***	0.04	23.92
	ENFO4	0.89***	0.02	45.77
SETA Programme CR = 0.89	SETA1	0.80***	0.06	14.63
	SETA2	0.86***	0.03	29.26
	SETA3	0.87***	0.04	22.12
ISP Effectiveness CR = 0.93	EFFE1	0.84***	0.03	31.84
	EFFE2	0.84***	0.04	21.37

	EFFE3	0.87***	0.03	32.41
	EFFE4	0.86***	0.03	26.18
	EFFE5	0.85***	0.04	21.69

Note: * p < 0.05, ** p<0.01, *** p< 0.001

5.3.2. *Indicator Reliability*

Indicator reliability can be assessed by factor loadings which show whether associated indicators of a construct have common characteristics or not (Hair, 2014). The minimum requirement for indicator reliability is that all indicators' outer loadings should be 0.708 or higher and statistically significant (Hair, 2014). As shown in Table 5.3, all items in this study had outer loadings that were statistically significant and higher than the threshold value of 0.708. According to the result, all measurement items adopted in this study had satisfactory indicator reliability.

5.3.3. *Convergent Validity*

Convergent validity is the extent of correlation between a measure with alternative measures in a construct. Convergent validity can be measured by the average variance extracted (AVE) value. A construct has satisfactory convergent validity when it has an AVE value higher than 0.5 and all the outer loadings exceed 0.7 for all items (Hair, 2014). Table 5.4 reports that all constructs' AVE value ranged from 0.69 to 0.93, which is higher than the threshold value of 0.5. The results showed that all constructs of this study had sufficient convergent validity.

Table 5.4*AVE Value for First-Order Constructs*

Constructs	Average Variance Extracted (AVE)
Coercive Mechanism	0.75
Mimetic Mechanism	0.76
Normative Mechanism	0.75
Senior Management Participation in ISP	0.69
Articulate Vision	0.72
Provide Model	0.72
Fostering Acceptance	0.82
High Performance Expectation	0.78
Individualised Support	0.93
Intellectual Stimulation	0.91
ISP Enforcement	0.72
SETA Programme	0.72
ISP Effectiveness	0.72

5.3.4. Discriminant Validity

Discriminant validity refers to the level of the distinction between constructs. It indicates that a construct uniquely describes a phenomenon that is not explained by other constructs of the model (Hair, 2014). There are three evaluation methods to determine discriminant validity: 1) Fornell-Larcker's criterion, 2) cross loadings, and 3) the heterotrait-monotrait (HTMT) ratio (Hair, 2014; Hair et al., 2019; Henseler et al., 2015). In the first method, to achieve adequate discriminant validity, the square root of AVE values of a construct should be higher than the correlation with other constructs (Hair, 2014). Table 5.5 reports the square root of the AVE value in bold and the correlation between constructs in non-bold. The results showed that all the correlations between constructs were lower than the square root of the AVE value (bolded values on the diagonal) which indicated that Fornell-Larcker's criterion was satisfied.

Table 5.5

Factor Loadings of the Measurement Model

Latent Variable Correlation	Coercive Mechanism	Mimetic Mechanism	Normative Mechanism	Senior Management Participation in ISP	Articulate Vision	Provide Model	Fostering Acceptance	High Performance Expectation	Individualised Support	Intellectual Stimulation	ISP Enforcement	SETA Programme	ISP Effectiveness
Coercive Mechanism	0.87												
Mimetic Mechanism	0.73	0.87											
Normative Mechanism	0.26	0.20	0.86										
Senior Management Participation in ISP	0.69	0.73	0.16	0.83									
Articulate Vision	0.61	0.64	0.19	0.64	0.85								
Provide Model	0.57	0.52	0.08	0.55	0.68	0.85							
Fostering Acceptance	0.35	0.37	0.23	0.39	0.48	0.51	0.90						
High Performance Expectation	0.43	0.50	0.02	0.51	0.59	0.63	0.45	0.88					
Individualised Support	-0.14	-0.20	0.34	-0.16	0.01	-0.05	0.16	0.02	0.96				
Intellectual Stimulation	0.10	0.18	0.24	0.19	0.32	0.25	0.45	0.31	0.33	0.95			
ISP Enforcement	0.54	0.52	0.04	0.55	0.61	0.64	0.41	0.66	-0.13	0.18	0.85		
SETA Programme	0.53	0.55	0.08	0.64	0.51	0.47	0.38	0.42	-0.13	0.30	0.54	0.85	
ISP Effectiveness	0.56	0.57	0.11	0.69	0.63	0.64	0.48	0.57	-0.11	0.31	0.62	0.69	0.85

In the second method, the model has satisfactory discriminant validity when its indicators' outer loadings for associated constructs exceed the level of its cross loadings on other constructs (Hair, 2014). In this study, the correlation table between constructs and the cross loadings was generated using the SmartPLS algorithm function. Table 5.6 demonstrates the indicators' outer loadings as bolded values and cross loadings as non-bolded values. All the indicators' outer loadings were higher than the cross loadings.

Table 5.6

Cross Loadings of the Measurement Model

Items	Coercive Mechanism	Mimetic Mechanism	Normative Mechanism	Senior Management Participation in ISP	Articulate Vision	Provide Model	Fostering Acceptance	High Performance Expectation	Individualised Support	Intellectual Stimulation	SETA Programme	ISP Enforcement	ISP Effectiveness
COER1	0.89	0.64	0.20	0.59	0.53	0.45	0.22	0.38	-0.16	0.01	0.43	0.49	0.48
COER2	0.84	0.60	0.28	0.58	0.50	0.53	0.38	0.30	-0.07	0.20	0.47	0.44	0.47
COER3	0.88	0.65	0.19	0.64	0.55	0.51	0.31	0.43	-0.14	0.06	0.48	0.48	0.51
MIM1	0.66	0.90	0.18	0.66	0.60	0.50	0.27	0.50	-0.19	0.13	0.51	0.51	0.53
MIM2	0.56	0.84	0.15	0.59	0.51	0.39	0.36	0.38	-0.17	0.22	0.42	0.34	0.45
MIM3	0.69	0.87	0.19	0.66	0.56	0.47	0.34	0.42	-0.15	0.14	0.51	0.49	0.52
NORM1	0.29	0.20	0.90	0.18	0.19	0.12	0.14	0.01	0.24	0.12	0.08	0.07	0.10
NORM2	0.15	0.15	0.86	0.12	0.10	-0.03	0.26	-0.02	0.37	0.30	0.05	-0.07	0.08
NORM3	0.19	0.17	0.83	0.11	0.21	0.10	0.24	0.07	0.31	0.24	0.07	0.08	0.11
PART1	0.60	0.60	0.16	0.83	0.57	0.44	0.37	0.43	-0.06	0.09	0.54	0.50	0.53
PART2	0.51	0.54	0.22	0.75	0.45	0.41	0.27	0.33	-0.11	0.23	0.44	0.33	0.50
PART3	0.61	0.67	0.05	0.90	0.57	0.51	0.33	0.50	-0.21	0.15	0.60	0.53	0.68
ARTI1	0.48	0.53	0.11	0.51	0.85	0.61	0.37	0.50	-0.02	0.22	0.38	0.60	0.57
ARTI2	0.65	0.57	0.23	0.58	0.85	0.61	0.46	0.46	0.00	0.26	0.51	0.57	0.51
ARTI3	0.52	0.55	0.15	0.63	0.86	0.53	0.36	0.50	0.00	0.26	0.47	0.45	0.53
ARTI4	0.50	0.49	0.19	0.54	0.86	0.58	0.45	0.55	0.04	0.30	0.38	0.47	0.55
ARTI5	0.41	0.56	0.12	0.47	0.82	0.54	0.41	0.47	0.02	0.35	0.43	0.43	0.50
PROV1	0.45	0.43	0.12	0.45	0.57	0.85	0.42	0.56	0.02	0.25	0.40	0.56	0.50
PROV2	0.39	0.35	0.02	0.43	0.52	0.78	0.43	0.42	-0.03	0.25	0.35	0.41	0.52
PROV3	0.58	0.54	0.06	0.52	0.64	0.91	0.46	0.61	-0.11	0.17	0.45	0.63	0.61
FOST1	0.41	0.37	0.26	0.38	0.53	0.53	0.90	0.46	0.18	0.43	0.35	0.41	0.46

FOST2	0.28	0.33	0.23	0.33	0.42	0.42	0.87	0.30	0.22	0.42	0.39	0.33	0.39
FOST3	0.22	0.25	0.15	0.32	0.33	0.42	0.90	0.41	0.13	0.42	0.27	0.32	0.41
FOST4	0.33	0.36	0.19	0.36	0.44	0.46	0.94	0.44	0.06	0.38	0.37	0.39	0.45
HIGH1	0.35	0.46	0.03	0.45	0.50	0.51	0.37	0.83	0.00	0.23	0.34	0.44	0.46
HIGH2	0.44	0.46	0.00	0.43	0.55	0.60	0.40	0.89	0.06	0.27	0.39	0.63	0.50
HIGH3	0.36	0.42	0.03	0.48	0.50	0.56	0.42	0.93	-0.01	0.31	0.37	0.65	0.55
INDIV1	-0.10	-0.19	0.35	-0.12	0.02	-0.03	0.16	0.04	0.97	0.31	-0.12	-0.13	-0.10
INDIV2	-0.17	-0.19	0.31	-0.18	-0.01	-0.07	0.16	0.00	0.96	0.32	-0.13	-0.13	-0.12
INTEL1	0.05	0.14	0.26	0.14	0.30	0.22	0.41	0.29	0.36	0.95	0.24	0.16	0.27
INTEL2	0.14	0.21	0.20	0.21	0.31	0.27	0.45	0.30	0.26	0.96	0.34	0.17	0.31
SETA1	0.37	0.47	0.11	0.51	0.39	0.27	0.34	0.32	-0.11	0.23	0.81	0.36	0.51
SETA2	0.46	0.44	0.02	0.54	0.43	0.45	0.33	0.37	-0.07	0.30	0.87	0.47	0.65
SETA3	0.52	0.50	0.08	0.59	0.48	0.47	0.30	0.37	-0.16	0.24	0.87	0.53	0.59
ENFO1	0.45	0.47	0.00	0.46	0.54	0.53	0.30	0.46	-0.09	0.06	0.50	0.81	0.48
ENFO2	0.52	0.42	0.14	0.44	0.56	0.52	0.41	0.49	-0.13	0.22	0.44	0.84	0.50
ENFO3	0.42	0.44	-0.03	0.50	0.49	0.54	0.35	0.63	-0.11	0.19	0.46	0.86	0.53
ENFO4	0.46	0.43	0.02	0.47	0.47	0.57	0.33	0.64	-0.12	0.13	0.45	0.89	0.58
EFFE1	0.49	0.51	0.16	0.56	0.60	0.59	0.47	0.57	0.00	0.25	0.53	0.57	0.83
EFFE2	0.45	0.50	0.19	0.59	0.58	0.49	0.48	0.46	-0.02	0.37	0.61	0.45	0.84
EFFE3	0.54	0.50	0.04	0.61	0.50	0.54	0.40	0.49	-0.12	0.22	0.57	0.56	0.86
EFFE4	0.52	0.53	0.06	0.65	0.54	0.62	0.37	0.50	-0.17	0.26	0.67	0.56	0.86
EFFE5	0.39	0.39	0.05	0.54	0.46	0.47	0.31	0.41	-0.15	0.21	0.56	0.49	0.85

The HTMT ratio is used to evaluate the correlation between constructs. Henseler et al. (2015) suggest that the performance of HTMT is better in determining specificity and sensitivity rates than cross-loadings or the Fornell-Larcker criterion. Typically, for conceptually similar constructs, HTMT values above 0.9 would suggest the lack of discriminant validity between the constructs and with respect to conceptually distinct constructs, HTMT values less than 0.85 are the indications of discriminant validity (Henseler et al., 2015). Table 5.7 reports that all HTMT ratios of the correlations between constructs were satisfied (lower than 0.90), except the mimetic mechanism that had a HTMT ratio higher than 0.90. Thus, MIM3 was removed and the HTMT ratio was 0.88, which was a satisfactory result.

Overall, the results confirmed that all discriminant validity testing methods including the Fornell-Larcker criterion, cross-loadings, and the HTMT ratio were met, showing that the measurement model had discriminant validity.

Table 5.7

HTMT Ratio of the Measurement Model

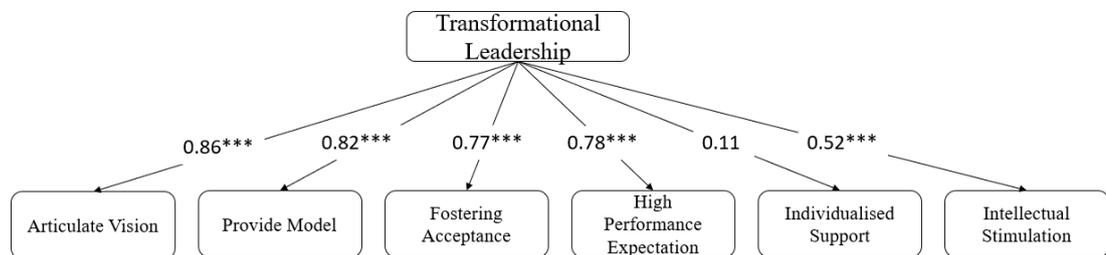
Latent Variable Correlation	Coercive Mechanism	Mimetic Mechanism	Normative Mechanism	Senior Management Participation in ISP	Articulate Vision	Provide Model	Fostering Acceptance	High Performance Expectation	Individualised Support	Intellectual Stimulation	ISP Enforcement	SETA Programme	ISP Effectiveness
Mimetic Mechanism	0.882												
Normative Mechanism	0.291	0.244											
Senior Management Participation in ISP	0.865	0.877	0.206										
Articulate Vision	0.695	0.726	0.222	0.772									
Provide Model	0.683	0.634	0.111	0.695	0.790								
Fostering Acceptance	0.389	0.376	0.277	0.458	0.521	0.591							
High Performance Expectation	0.506	0.600	0.050	0.623	0.667	0.743	0.500						
Individualised Support	0.159	0.212	0.406	0.177	0.027	0.073	0.179	0.053					
Intellectual Stimulation	0.125	0.169	0.295	0.227	0.363	0.306	0.497	0.347	0.359				
ISP Enforcement	0.639	0.648	0.113	0.669	0.675	0.746	0.448	0.741	0.148	0.197			
SETA Programme	0.643	0.679	0.099	0.811	0.599	0.571	0.443	0.498	0.153	0.352	0.642		
ISP Effectiveness	0.645	0.659	0.133	0.823	0.693	0.744	0.517	0.644	0.120	0.340	0.694	0.801	

5.3.5. Second-Order Construct Assessment

The transformational leadership behaviours were modelled as a second-order reflective-formative construct with six first-order constructs: articulate vision, provide model, fostering acceptance, high performance expectation, individualised support, and intellectual stimulation. The transformational leadership second-order formative measurement model and its outer loadings are illustrated in Figure 5.1.

Figure 5.1

Second-order Factor of Transformational Leadership



Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The construct of transformational leadership had the outer loadings as follows: articulate vision (0.86), provide model (0.82), fostering acceptance (0.77), high performance expectation (0.78), individualised support (0.11), and intellectual stimulation (0.52). All the items were statistically significant with a p-value under 0.001, except for the individualised support construct that had low loadings with an insignificant result and was removed from the research model (Hair, 2014). After the removal of individualised support, the CR increased from 0.92 to 0.93 and AVE increased from 0.77 to 0.86, which is higher than the threshold value of 0.7 for CR and 0.5 for AVE (Gefen et al., 2000; Hair, 2014).

Overall, the second-order construct had satisfactory reliability and validity test. The results confirmed that the model was statistically valid and fit to be used to assess the structural model.

5.4. Structural Model Assessment

This section evaluates the validity of the structural model and presents the results of the hypothesised relationships. Mediation and moderation analysis are also assessed here. This part also reports the effect of control variables and common method bias.

5.4.1. Coefficient of Determination (R²)

The coefficient of determination (R²) refers to the extent of variance in endogenous variables that can be explained by exogenous variables. Thus, a higher value of R² indicates a higher level of predictive accuracy. The R² values of approximately 0.67 are substantial, 0.33 are average and 0.19 are weak. This study applied SmartPLS to compile the R² value and the bootstrapping required to generate the t-statistics value. The bootstrapping generated 10000 samples from 207 cases, which is optimal for assessing PLS-SEM parameters (Streukens & Leroi-Werelds, 2016). The results showed that neo-institutional factors explained 57.8% of the variance in senior management participation in ISP and transformational leadership explained 45.4% of the variance in ISP enforcement. Furthermore, all predictors explained 62.5% of the variance in ISP effectiveness.

5.4.2. Path Coefficients

Each hypothesis presents a path connecting two latent constructs, and researchers can accept or reject the hypothesis based on the path coefficients between them. In the structural model analysis, path coefficients should also be checked for the “algebraic sign, magnitude, and significance” (Urbach & Ahlemann, 2010, p. 21). The postulated hypothesis can be rejected if the algebraic sign of the path coefficients contrasts with the theoretical relationship. A path coefficient’s magnitude presents the strength of the relationship between two latent variables. Urbach and Ahlemann (2010) suggest that the path coefficient is significantly satisfied at the minimum level of 0.5. In this study, the path coefficients were generated by the SmartPLS bootstrapping function to test the relationship and the significance level between constructs. In addition to evaluating the

t-value and p-value, an assessment of the confidence interval is needed. The confidence interval refers to the probability of determined error. For example, if the probability of error is 5%, the z-value is 1.96, which results in the upper bound equalling the path coefficient + 1.96 × standard deviation and the lower bound equalling the path coefficient - 1.96 × standard deviation. Henseler and colleagues (2009) maintain that “if a confidence interval for an estimated path coefficient does not include zero, the hypothesis that equals zero is rejected” (p.306). Thus, a lower bound and upper bound range that includes zero should be rejected. Table 5.8 reports the path coefficients, standard deviation, t-statistics, and the confidence interval of standardised regression coefficients. Based on the table results, the acceptance or rejection of the hypotheses is reviewed in the next section.

Table 5.8

Path Coefficients, T-statistics, Standard Deviation, and Confidence Interval for Hypothesised Paths

Paths	Path Coefficient	T Statistics	Std. Dev	Lower Bound	Upper Bound
Coercive Mechanism -> Senior Management Participation in ISP	0.37***	4.71	0.08	0.22	0.52
Mimetic Mechanism -> Senior Management Participation in ISP	0.41***	6.04	0.07	0.27	0.55
Normative Mechanism -> Senior Management Participation in ISP	-0.02	0.50	0.05	-0.12	0.07
Senior Management Participation in ISP -> ISP Effectiveness	0.51***	4.63	0.11	0.29	0.72
Transformational Leadership -> ISP Enforcement	0.67***	12.55	0.05	0.57	0.78
ISP Enforcement -> ISP Effectiveness	0.34**	3.13	0.11	0.13	0.55

Note: * p < 0.05, ** p<0.01, *** p< 0.001 Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + 1.96 × Standard Deviation, Lower bound = Path coefficient - 1.96 × Standard Deviation

5.4.3. Mediation Analysis

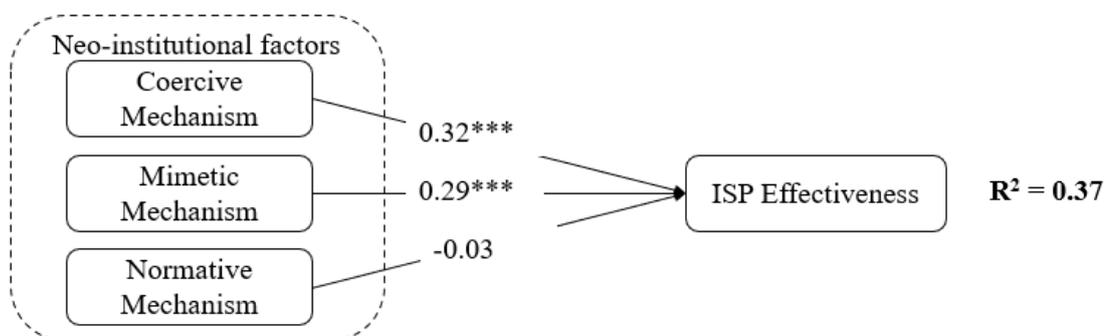
Mediation and moderation relationships are essential but might create confusion in PLS-SEM (Hair, 2014). Mediation aims to explain both the direct and indirect path relationship between

constructs. This section contains two mediation analyses. The first analysis examines the relationship between neo-institutional factors and ISP effectiveness through the mediator role of senior management participation in ISP. The second analysis explores the relationship between transformational leadership and ISP effectiveness mediating by ISP enforcement. The approach of Preacher and Hayes (2008) is better suited to the PLS-SEM method than is the Sobel test due to its greater flexibility in distributional assumptions and sample size (Hair, 2014). There are three steps in Preacher and Hayes' model when evaluating the mediation relationship: 1) evaluate the significance of the direct effect excluding the mediator variable in the model, 2) evaluate the significance of the indirect effect including the mediator variable in the model, and 3) evaluate the variance accounted for (VAF). If the VAF value is greater than 0.80, between 0.20 and 0.80, or less than 0.20, the relationship is full mediation, partial mediation, and no mediation, respectively (Hair, 2014).

Figures 5.2 and 5.3 demonstrate the result of the first mediation analysis, which sought to determine the mediating effect of senior management participation in ISP on the relationship between neo-institutional factors and ISP effectiveness. The first step was to analyse the influence of the coercive, mimetic, and normative mechanisms on ISP effectiveness. Figure 5.2 reports that there was a significantly positive effect of the coercive and mimetic mechanisms on ISP effectiveness.

Figure 5.2

Results of First Mediation Analysis without the Mediator Variable



The second step was to evaluate the indirect effect of institutional mechanisms on ISP effectiveness. The mediating effect of senior management participation on ISP effectiveness was

also examined. Figure 5.3 demonstrates that the coercive and mimetic mechanisms had a positive influence on ISP effectiveness. Moreover, there is a significantly positive effect of senior management participation in ISP on ISP effectiveness. However, there was no significant effect of coercive and mimetic mechanisms on ISP effectiveness when the mediator variable was included.

Figure 5.3

Results of First Mediation Analysis with the Mediator Variable

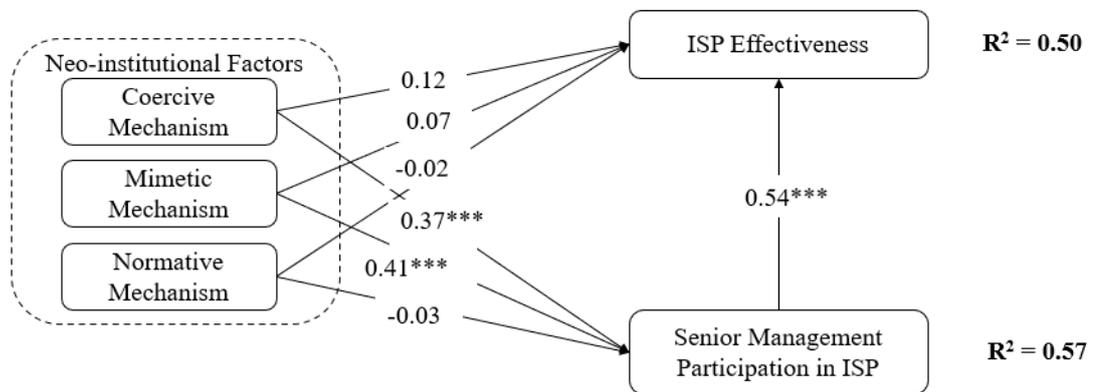


Table 5.9 shows that path coefficients of coercive and mimetic mechanisms were insignificant as they contained zero (Henseler et al., 2009).

Table 5.9

Results of First Mediation Analysis: Path Coefficients, Standard Deviation, T-statistics and Confidence Interval

Paths	Path Coefficients	Std. Dev	T Statistics	Lower Bound	Upper Bound
Coercive Mechanism -> ISP Effectiveness	0.12	0.12	1.05	-0.11	0.35
Coercive Mechanism -> Senior Management Participation in ISP	0.37***	0.08	4.94	0.22	0.52
Mimetic Mechanism -> ISP Effectiveness	0.07	0.14	0.51	-0.18	0.35
Mimetic Mechanism -> Senior Management Participation in ISP	0.41***	6.04	0.07	0.27	0.55
Normative Mechanism -> ISP Effectiveness	-0.02	0.07	0.34	-0.15	0.11
Normative Mechanism -> Senior Management Participation in ISP	-0.03	0.05	0.54	-0.13	0.07
Senior Management Participation in ISP -> ISP Effectiveness	0.54***	0.11	5.03	0.33	0.76

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + $1.96 \times$ Standard Deviation, Lower bound = Path coefficient - $1.96 \times$ Standard Deviation

Figures 5.4 and 5.5 report the result of the second mediation analysis, that was undertaken to evaluate the mediating effect of ISP enforcement on the relationship between transformational leadership and ISP effectiveness. Figure 5.4 shows that there was a significantly positive influence of transformational leadership on ISP effectiveness.

Figure 5.4

Results of Second Mediation Analysis without the Mediator Variable

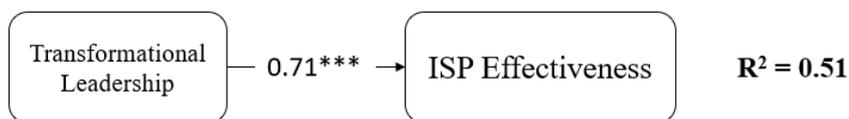


Figure 5.5 and Table 5.10 illustrate the significance of the indirect effect of transformational leadership on ISP effectiveness. Transformational leadership was found to positively influence both ISP enforcement and ISP effectiveness. Moreover, there was a significantly positive relationship between ISP enforcement and ISP effectiveness. The introduction of the mediator

variable ISP enforcement reduced the coefficient values between transformational leadership and ISP effectiveness from 0.71 to 0.55.

Figure 5.5

Results of the Second Mediation Analysis with the Mediator Variable

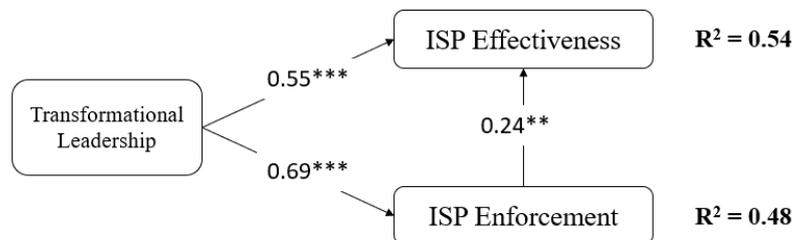


Table 5.10

Results of Second Mediation Analysis: Path Coefficients, Standard Deviation, T-statistics and Confidence Interval

Paths	Path Coefficients	Std. Dev	T Statistics	Lower Bound	Upper Bound
ISP Enforcement -> ISP Effectiveness	0.24**	0.11	2.24	0.02	0.46
Transformational Leadership -> ISP Effectiveness	0.55***	0.08	6.59	0.39	0.71
Transformational Leadership -> ISP Enforcement	0.69***	0.05	15.22	0.59	0.79

Note: * p < 0.05, ** p < 0.01, *** p < 0.001 Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + 1.96 × Standard Deviation, Lower bound = Path coefficient - 1.96 × Standard Deviation

According to Preacher and Hayes (2008), the last step in assessing the mediating effect of a construct is to calculate the VAF value: $VAF = (\rho_{12.\rho_{23}})/(\rho_{12.\rho_{23}} + \rho_{13})$. Table 5.11 presents a summary of the direct and indirect relationship in the mediation analysis of this research. As mentioned earlier, a VAF value less than 0.20 indicates no mediation; a VAF value between 0.20 and 0.80 indicates partial mediation; and a VAF value greater than 0.80 indicates full mediation. Adding the mediator variables into the research model provides further explanation on the variance of criterion variables with the mediator variables. The R² value increased from 38% to 50% in the first mediation analysis and increased from 51% to 54% in the second mediation analysis. The results showed that there was no mediation effect of senior management

participation on ISP effectiveness in the research model due to the insignificant indirect effects. On the other hand, the partial mediation effect of ISP enforcement on the relationship between transformational leadership and ISP effectiveness was significant.

Table 5.11*Results of the Mediation Analysis: Path Coefficients, Standard Deviation, VAF, Type of Mediation, and Final Results*

Paths		Path Coefficients	Std. Dev	VAF	Type of Mediation	Result
ρ_{12} -1	Coercive Mechanism -> Senior Management Participation in ISP	0.37***	0.08	No indirect effect	No mediation	No mediation effect of senior management participation in ISP on the relationship between neo-institutional mechanisms (coercive, mimetic, and normative mechanisms) and ISP effectiveness
ρ_{23} -1	Senior Management Participation in ISP -> ISP Effectiveness	0.54***	0.11			
ρ_{13} -1	Coercive Mechanism -> ISP Effectiveness	0.12	0.12			
ρ_{12} -2	Mimetic Mechanism -> Senior Management Participation in ISP	0.45***	0.08	No indirect effect	No mediation	
ρ_{23} -2	Senior Management Participation in ISP -> ISP Effectiveness	0.54***	0.11			
ρ_{13} -2	Mimetic Mechanism -> ISP Effectiveness	0.1	0.12			
ρ_{12} -3	Normative Mechanism -> Senior Management Participation in ISP	-0.03	0.05	No indirect effect	No mediation	
ρ_{23} -3	Senior Management Participation in ISP -> ISP Effectiveness	0.54***	0.11			
ρ_{13} -3	Normative Mechanism -> ISP Effectiveness	-0.02	0.07			
ρ_{12} -4	ISP Enforcement -> ISP Effectiveness	0.24**	0.11	0.23	Partial mediation	The relationship between transformational leadership and ISP effectiveness was partially mediated by ISP enforcement
ρ_{23} -4	Transformational Leadership -> ISP Enforcement	0.69***	0.05			
ρ_{13} -4	Transformational Leadership -> ISP Effectiveness	0.55***	0.08			

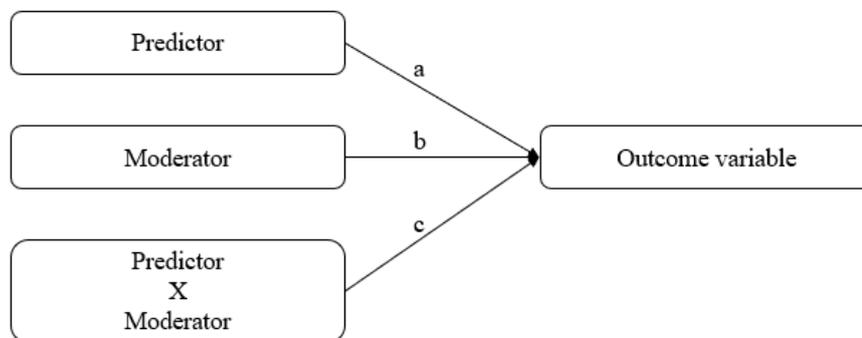
Note: *** $p < 0.001$. ρ_{12} and ρ_{23} are the paths between the independent variable, dependent variable, and mediator variable. ρ_{13} is the path between the independent variable and dependent variable without the mediator variable.

5.4.4. Moderation Analysis

A moderator is a construct that directly influences the strength or the direction of the relationship between a predictor (exogenous or independent) and a criterion (endogenous or dependent) variable (Baron & Kenny, 1986; Hair, 2014). There are two types of moderating relationship: continuous and categorical. The continuous moderating effect occurs when the moderator construct's measurement is a metric while its measurement is a category with the categorical moderating effect. The continuous moderating effect influences the strength of the relationship rather than the direction (Hair, 2014). Figure 5.6 illustrates the relationship between variables. Path "a" represents the influence of the predictor, path "b" represents the influence of the moderator, and path "c" represents the interaction of these two. The testing of the hypothesis is based on the significance level of path "c" and not conceptually relevant to the significance level of the predictor or moderator (path "a" and "b") (Baron & Kenny, 1986).

Figure 5.6

Moderator Model. Adopted from Baron and Kenny (1986)



In this research model, the SETA programme was evaluated as a continuous moderator variable between ISP enforcement and ISP effectiveness. Figure 5.6 shows that the SETA programme and ISP enforcement positively influenced ISP effectiveness. However, the moderating effect of the SETA programme on ISP effectiveness was insignificant. Thus, there was no moderating effect of the SETA programme on ISP effectiveness. Table 5.12 presents the results of the moderation analysis of the SETA programme construct.

Figure 5.7

Results of Moderation Analysis

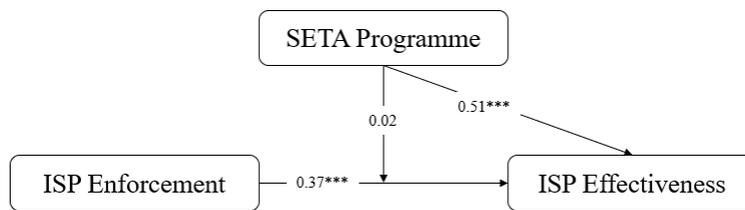


Table 5.12

Results of Moderation Analysis: Path Coefficients, Standard Deviation, T-statistics, and Confidence Interval

Paths	Path Coefficients	Std. Dev	T Statistics	Lower Bound	Upper Bound
ISP Enforcement -> ISP Effectiveness	0.37***	0.09	4.02	0.19	0.55
SETA Programme -> ISP Effectiveness	0.51***	0.10	5.25	0.31	0.71
Moderating Effect SETA -> ISP Effectiveness	0.02	0.03	0.48	-0.04	0.08

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + $1.96 \times$ Standard Deviation, Lower bound = Path coefficient - $1.96 \times$ Standard Deviation

5.4.5. Testing Hypotheses

In structural model analysis, the path coefficients between latent constructs are examined to test and confirm the proposed theoretical model and hypotheses. The R^2 should be reported in PLS studies for all dependent constructs in the research model (Hulland, 1999). In this research, there were three dependent variables: senior management participation in ISP, ISP enforcement, and ISP effectiveness, with an R^2 value of 0.58, 0.45, and 0.62, respectively. In other words, 57.8% of variance in senior management ISP participation, 45.4% of variance in ISP enforcement, and 56.1% variance in ISP effectiveness could be explained by the independent variables.

According to the results, all the hypotheses were supported except for Hypothesis 3 and Hypothesis 7. The path coefficients for the supported hypotheses were positive and the statistically significant β (path coefficients) value ranged from 0.23 to 0.67. Table 5.13 and Figure 5.7 provide a summary of hypothesis testing in this study.

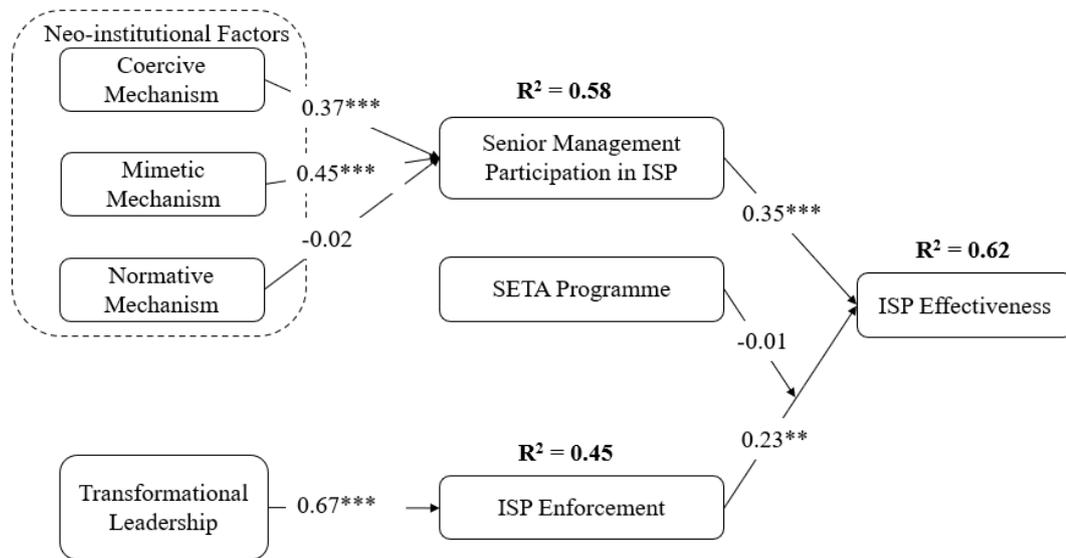
Table 5.13

Summary of Hypothesis Testing

#	Hypotheses	Result
H1	Coercive mechanisms related to ISP will positively affect senior management participation in ISP.	Supported
H2	Mimetic mechanisms related to ISP will positively affect senior management participation in ISP.	Supported
H3	Normative mechanisms related to ISP will positively affect senior management participation in ISP.	Not supported
H4	Transformational leadership will positively affect ISP enforcement in organisations.	Supported
H5	A higher level of senior management participation in ISP will lead to a higher level of ISP effectiveness in organisations.	Supported
H6	A higher level of ISP enforcement will lead to a higher level of ISP effectiveness in organisations.	Supported
H7	The SETA programme positively moderates the impact of ISP enforcement on ISP effectiveness.	Not supported

Figure 5.8

Results of Hypothesis Testing



The hypothesis testing analysis demonstrated the significant positive relationship between coercive mechanisms and senior management participation in ISP ($\beta=0.37$, $t=4.69$, $p < 0.001$). Thus, the hypothesis (H1) that coercive mechanisms related to ISP will positively affect senior management participation in ISP was supported. Mimetic mechanisms were also found to positively influence senior management participation in ISP ($\beta=0.45$, $t=5.72$, $p < 0.001$). Thus, the hypothesis (H2) that mimetic mechanisms related to ISP will positively affect senior management participation in ISP was supported. However, there was an insignificant relationship between normative mechanisms and senior management participation in ISP ($\beta=-0.02$, $t=0.50$, $p = 0.616$). Thus, the hypothesis (H3) that normative mechanisms related to ISP will positively affect senior management participation in ISP was not supported. Furthermore, there was a significantly positive relationship between transformational leadership and ISP enforcement ($\beta=0.67$, $t=12.74$, $p < 0.001$). Thus, the hypothesis (H4) that transformational leadership will positively affect ISP enforcement in organisations was supported (as demonstrated in Table 5.14).

Table 5.14 also reports that senior management participation in ISP had a significant path coefficient with ISP effectiveness ($\beta=0.35$, $t=3.88$, $p < 0.001$). Hence, the hypothesis (H5) that a higher level of senior management participation in ISP will lead to a higher level of ISP

effectiveness in organisations was supported. ISP enforcement was also found to positively influence ISP effectiveness ($\beta=0.23$, $t=2.62$, $p = 0.009$). Hence, the hypothesis (H6) that a higher level of ISP enforcement will lead to a higher level of ISP effectiveness in organisations was supported.

Similarly, the moderation analysis discussed above and the path coefficients of the moderating effect of the SETA programme on the relationship between ISP enforcement and ISP effectiveness were found to be insignificant ($\beta=-0.01$, $t=0.51$, $p = 0.608$). Thus, the hypothesis (H6) that the SETA programme positively moderates the impact of ISP enforcement on ISP effectiveness was not supported (see Table 5.14).

Table 5.14

Results of Hypotheses

#	Paths	Path Coefficients	Std.Dev	T-statistics	Lower Bound	Upper Bound
H1	Coercive Mechanism -> Senior Management Participation in ISP	0.37***	0.08	4.69	0.22	0.52
H2	Mimetic Mechanism -> Senior Management Participation in ISP	0.45***	0.08	5.72	0.30	0.60
H3	Normative Mechanism -> Senior Management Participation in ISP	-0.02	0.05	0.50	-0.12	0.08
H4	Transformational Leadership -> ISP Enforcement	0.67***	0.05	12.74	0.57	0.77
H5	Senior Management Participation in ISP -> ISP Effectiveness	0.35***	0.09	3.88	0.17	0.53
H6	ISP Enforcement -> ISP Effectiveness	0.23**	0.09	2.62	0.06	0.40
H7	Moderating Effect 1 -> ISP Effectiveness	-0.01	0.03	0.51	-0.06	0.04

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + $1.96 \times$ Standard Deviation, Lower bound = Path coefficient - $1.96 \times$ Standard Deviation

5.4.6. Testing Control Variables

The results of the structural model analysis with control variables (certification, job tenure, and training or education) are reported in Table 5.15. As shown in Table 5.15, there was a significantly positive relationship between the number of senior managers’

certificates in ISP and ISP effectiveness ($\beta=0.26$, $t=4.58$, $p < 0.001$). Moreover, job tenure with a management role in the financial industry, that is, the number of years working in management positions in the financial industry, positively influenced ISP effectiveness ($\beta=0.24$, $t=2.15$, $p = 0.032$). The remaining control variables (job tenure in the financial industry and training or education provided for senior managers) had no significant impact on ISP effectiveness.

Table 5.15

Results for Control Variables: Path Coefficients, Standard Deviation, T-statistics, and Confidence Interval

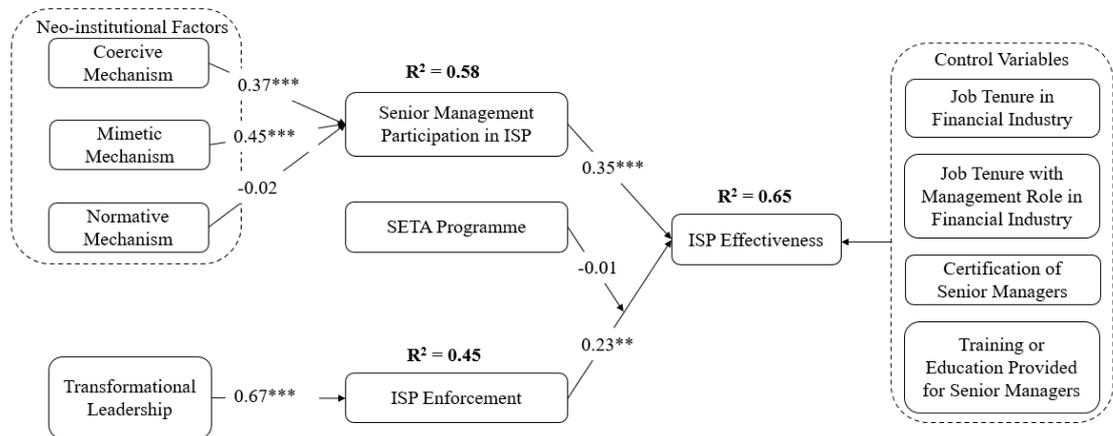
Paths	Path Coefficients	Std. Dev	T Statistics	Lower Bound	Upper Bound
Certification of Senior Managers -> ISP Effectiveness	0.26***	0.06	4.58	0.14	0.38
Job Tenure with Management Role in Financial Industry -> ISP Effectiveness	0.24**	0.11	2.15	0.02	0.46
Job Tenure in the Financial industry -> ISP Effectiveness -> ISP Effectiveness	0.01	0.12	0.11	-0.23	0.25
Training or Education Provided for Senior Managers -> ISP Effectiveness	-0.13	0.08	1.60	-0.29	0.03

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ Formulas to calculate upper and lower bounds were: Upper bound = Path coefficient + $1.96 \times$ Standard Deviation, Lower bound = Path coefficient - $1.96 \times$ Standard Deviation

A comparison between Figure 5.7 (in the hypothesis section) and Figure 5.8 showed that after the introduction of control variables, the R^2 increased from 0.62 to 0.65, which indicated that most of the variance of the dependent variables was explained by the theoretical constructs and only a small portion of the variance (3%) was explained by the control variables. Thus, the inclusion of control variables did not significantly influence the impact of the theoretical constructs.

Figure 5.9

Structural Model with Control Variables



5.4.7. Common Method Bias

This study adopted the procedural and statistical remedies, multitrait-multimethod, and the marker variable to address and control the issue of common method bias (Malhotra et al., 2006; Podsakoff et al., 2003). For the procedural remedies, the measurement items predictor and the criterion variables were adopted from pre-validated constructs and scales in the literature and the questions were placed in an appropriate arrangement in the questionnaire. Furthermore, the anonymity of the survey was ensured. The survey indicated that there were no right or wrong answers and encouraged respondents to answer the questions truthfully.

For the statistical remedies, Harman's single factor test was conducted to evaluate the variance explained by a single factor. An unrotated principal component factor analysis was performed using SPSS 26. Podsakoff and colleagues (2003) suggest that CMB occurs when a single factor from the factor analysis accounts for more than 50% of the variance in all of the variables. After the factor analysis using SPSS with 43 factors, the result of Harman's single factor test indicated that the first factor accounted for 38.13%, which can be interpreted as meaning that no single factor explained the majority of the variance. Thus, this research might not face issues with CMB. Then, the marker variable test was performed. The marker variable, which is a theoretically unrelated construct, was added to the research model as a control variable in criterion variables.

CMB occurs if the variance explained is increased by the unrelated construct. The marker variable was Vietnam Airlines' brand image, which was theoretically not correlated to other constructs and was measured by a multiple-item seven-point Likert scale. Table 5.16 indicates that the variance change after the inclusion of the marker variable was marginal (0.4% to 2.9%). This result showed that the issue of CMB was not significant in this study.

Table 5.16

Marker Variable Test

Paths	R²	R² with Marker Variable	ΔR²
Marker Variable -> Senior Management Participation in ISP	57.8%	59.9%	2.1%
Marker Variable -> ISP Enforcement	45.4%	48.3%	2.9%
Marker Variable -> ISP Effectiveness	56.1%	56.6%	0.5%

Chapter 6. Discussion of Results

This chapter presents a summary of the key findings of this study based on the results of data analysis in the last chapter. A detailed discussion of the findings in accordance with the research questions is then presented. The results are reviewed and their consistency or inconsistency with the findings of previous theoretical and practical studies are examined, with a focus on the relationship between neo-institutional forces, senior management participation in ISP and ISP effectiveness, transformational leadership, ISP enforcement and ISP effectiveness, and the moderating effect of the SETA programme.

6.1. Summary of Key Findings

Investment in IS is growing substantially around the world and one of the biggest concerns in organisations is IS breaches that can result in significant direct and indirect losses (EY, 2020; Gartner, 2020a; ISACA, 2019; Steinbart et al., 2018). Despite IS policies and the increasing investment in IS control technology, the main reason for IS losses originates from the negligence of employees (Chang & Lin, 2007; Chen et al., 2012; Hassandoust et al., 2020). The extant literature suggests that employees' non-compliance behaviours come from insufficient security awareness programmes, lack of IS-related training and coaching, and inadequate enforcement policies (Bulgurcu et al., 2010; Herath & Rao, 2009; Kajtazi et al., 2018). Inappropriate ISP implementation might create confusion and ambiguity concerning the benefits and costs of non-compliance behaviours, leading to a tendency to ignore or even violate organisational ISP and harm an organisation's information and assets (EY, 2020; Mink & Greifeneder, 2010). Furthermore, ISP violations also derive from a low-level of awareness, knowledge, skills, and the engagement of the senior management level (Ahmad et al., 2014; Chang & Ho, 2006; EY, 2020; ISACA, 2019; Von Solms, 2001). By becoming involved and utilising their leadership skills, senior managers can effectively transfer knowledge to employees, inspire them, and provide adequate pressure for enforcement (Bulgurcu et al., 2010; Chang & Ho, 2006; Knapp & Ferrante, 2012; Knapp et al., 2007). Therefore, there is a need to better understand the antecedents of ISP effectiveness in organisations.

Senior management commitment and support for IS play an important role in promoting the ISP compliance of employees (Daud et al., 2018; Kankanhalli et al., 2003; Knapp et al., 2006; Veiga & Eloff, 2007; Wall et al., 2013); however, there has been little focus on to how to motivate them to participate in IS management or on identifying the appropriate leadership traits required to improve IS performance. Several studies, however, have found that neo-institutional factors or external mechanisms have a positive influence on the commitment of senior managers in IS management (Hsu et al., 2015; Hu et al., 2007; Johnson, 2009). Furthermore, the extant literature has found that transformational leadership can result in a number of positive outcomes in relation to employees' commitment and workforce activities (Pierro et al., 2013), leading to positive IS performance (Bulgurcu et al., 2010; D'Arcy et al., 2009; Herath & Rao, 2009; Puhakainen & Siponen, 2010; Vance et al., 2012). As a result, there is a need to investigate the effect of external factors on senior management and the importance of the transformational leadership of senior managers in promoting ISP effectiveness in organisations. In this research, neo-institutional mechanisms and transformational leadership were evaluated to explain their influences on ISP effectiveness.

This study has attempted to extend the IS research that has previously focused on the individual level of IS engagement (e.g., employee compliance) and address the lack of investigation from managerial and organisational perspectives. The research model adopted the neo-institutional theory and transformational leadership framework to explain the role of external mechanisms and transformational leadership on ISP effectiveness through the mediator role of senior management participation in ISP and ISP enforcement.

Overall, the findings indicated that the proposed theoretical model is able to explain the influence of external mechanisms on senior management participation in ISP as well as the role of transformational leadership in ISP enforcement, which in turn, leads to ISP effectiveness. The research model, with its three dependent variables, has significant explanatory power. Neo-institutional mechanisms explained 57.8% of the variance in senior management participation in ISP, transformational leadership explained 45.4% of the variance in ISP enforcement, and all predictors explained 62.4% of the variance in ISP effectiveness. All the proposed hypothesised

relationships in the research model were supported by a majority percentage at the significance level of $p < 0.001$ except for Hypothesis 3 and Hypothesis 7.

Based on the research findings, it is clear that senior management participation in ISP is positively influenced by coercive and mimetic mechanisms and ISP enforcement is positively influenced by transformational leadership. ISP effectiveness was found to be significantly influenced by senior management participation in ISP and ISP enforcement. No relationship was found between normative mechanisms and senior management participation in ISP (Hypothesis 3). Furthermore, there was no mediating effect of senior management participation in ISP on the relationship between neo-institutional mechanisms and ISP effectiveness while ISP enforcement played a partial mediator role in the relationship between transformational leadership and ISP effectiveness. Finally, no moderating effect of the SETA programme on the relationship between ISP enforcement and ISP effectiveness was found (Hypothesis 7). Table 6.1 presents a summary of the research findings under each of the underlying research questions.

Table 6.1

Summary of Key Findings

Research Questions	Findings
<p>Research Question 1: What is the influence of neo-institutional factors on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?</p> <p>Sub research question 1.1: What is the influence of coercive mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?</p> <p>Sub research question 1.2: What is the influence of mimetic mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?</p> <p>Sub research question 1.3: What is the influence of normative mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?</p>	<p>Senior management participation in ISP positively influences ISP effectiveness.</p> <p>Coercive mechanisms positively influence senior management participation in ISP and in turn, lead to higher ISP effectiveness in an organisation.</p> <p>Mimetic mechanisms positively influence senior management participation in ISP and in turn, lead to higher ISP effectiveness in an organisation.</p> <p>There is no significant relationship between normative mechanisms, senior management participation in ISP, and ISP effectiveness in an organisation.</p> <p>There is no mediating effect of senior management participation on the relationship between coercive, mimetic, and normative mechanisms and ISP effectiveness.</p>
<p>Research Question 2: What is the influence of transformational leadership on the effectiveness of ISP in organisations through the mediator role of ISP enforcement?</p>	<p>Transformational leadership positively influences ISP enforcement and in turn, leads to higher ISP effectiveness.</p> <p>ISP enforcement positively influences ISP effectiveness.</p> <p>There is a partial mediating effect of ISP enforcement on the relationship between transformational leadership and ISP effectiveness.</p>

6.2. Discussion of the Findings

The findings based on the research questions are presented in this chapter. The results are evaluated and compared with previous studies in neo-institutional theory, the transformational leadership framework, and IS effectiveness. This research predicted a positive relationship between neo-institutional mechanisms and senior management participation in ISP, transformational leadership, and ISP enforcement, and a positive relationship between the two

dependent variables – senior management participation in ISP and ISP enforcement – and ISP effectiveness. All the relationships were found to be significant except for the normative mechanisms and criterion variables, and the moderating effect of the SETA programme. Thus, this chapter examines the role of significant relationships and the potential reason for non-significant relationships.

6.2.1. The Role of Neo-institutional Factors in Explaining ISP Effectiveness through Senior Management Participation in ISP

This section discusses the role of neo-institutional factors in explaining ISP effectiveness through the mediator role of senior management participation in ISP based on three sub-research questions.

Research Question 1: What is the influence of neo-institutional factors on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Neo-institutional theory refers to institutional isomorphisms – coercive, mimetic, and normative isomorphisms – that influence the rationality in organisations (DiMaggio & Powell, 1983). In this study, coercive and mimetic mechanisms were found to positively influence senior management participation in ISP. Moreover, senior management participation in ISP was found to positively influence ISP effectiveness in an organisation. Therefore, it can be concluded that external factors motivate senior managers' participation in ISP. If senior management participation in ISP is higher, ISP within organisations is enhanced. In particular, external factors change senior managers' beliefs and help them recognise the opportunities and benefits in applying those factors inside organisations. This leads to their actual involvement and participation in ISP and in turn, improves the utilisation of ISP in an organisation. The influence of external factors on senior management participation in IS has received theoretical support from the research of Hu and colleagues (2007), which argues that institutional factors motivate top managers to participate in IS initiatives and implement IS protocols and practices. In the context of this study, by actually participating in ISP, senior managers can shape the values and norms related to IS, promote the

designed IS-related practices, and motivate employees to comply with the implemented ISP, which will eventually lead to the effective implementation of ISP in an organisation. The positive impact of senior management participation in ISP on the effectiveness of ISP in an organisation has also received support from previous studies (e.g., Knapp & Ferrante, 2014; Knapp et al., 2007; Steinbart et al., 2018). For instance, top managers are able to advance security culture (as a form of ISP effectiveness) through the act of recognition, sponsorship, and support for IS activities (Knapp et al., 2007), enhance IS practices by developing and establishing IS standards as well as gaining employees' awareness and commitment (Knapp & Ferrante, 2012), and promote a security environment by improving relationships with stakeholders such as IS, internal audit, and HR (Steinbart et al., 2018). Thus, improvement in the effectiveness of ISP can be addressed by investigating the factors that increase senior management participation in ISP.

6.2.1.1 The Role of Coercive Mechanisms in Explaining ISP Effectiveness through Senior Management Participation in ISP

Sub research question 1.1: What is the influence of coercive mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Coercive mechanisms refer to formal or informal pressures from other organisations such as professional associations, governmental regulation, parent corporations, and competitive requirements of the market (DiMaggio & Powell, 1983; Teo et al., 2003; Zucker, 1987). The research findings showed a significantly positive relationship between coercive mechanisms and senior management participation in ISP ($\beta=0.37$, $t=4.69$, $p < 0.001$). However, the direct and indirect effect of coercive mechanisms on ISP effectiveness and the mediator role of senior management participation in ISP were non-significant. In terms of IS, coercive mechanisms cannot directly influence the effectiveness of ISP; instead, it positively influences senior managers' participation in ISP, which in turn will lead to ISP effectiveness in organisations. In other words, external forces will not impact the performance of ISP management without the direct involvement of the senior management level. If the pressures from local government, industry associations, or competitive conditions are higher, senior managers are likely to take ISP

more seriously and become more engaged in developing and promoting ISP activities. The power of governmental regulation to implement changes related to IS directly impact senior executives' behaviours instead of affecting them through belief structures that are developed through other scenarios such as industry associations and competitive conditions. Therefore, with a higher level of the actual involvement of senior managers in ISP, the effectiveness of ISP is likely to be higher (Knapp et al., 2007). This research finding is supported by the extant literature that has found that coercive forces influence the participation of top management (e.g., Barton et al., 2016; Hassandoust et al., 2020; Hu et al., 2007; Liang et al., 2007). For example, Hu and colleagues (2007) found that coercive forces motivate senior managers to participate in organisational changes and promote top-down information related to IS practices across the organisation. Furthermore, Hassandoust and colleagues (2020) highlight the importance of external factors such as government regulation on the participation of senior management in establishing information security knowledge-sharing platforms in organisations, which will eventually lead to an improvement in the security culture of an organisation. The State Bank of Vietnam (SBV) created a regulation that requires financial institutions operating in Vietnam to install and maintain security systems and solutions to control operational risk, prevent data leakage, and promote Vietnam's monetary and banking system (SBV, 2011). However, the requirement of SBV cannot directly reach all employees in an organisation – only the top management of the financial firms can be reached. Thus, the more top management proactively initiates, develops, and sponsors new ISP and practices and drives changes in organisations to fit with the coercive forces, the more effective the implementation of ISP and its utilisation in organisations (Knapp et al., 2007).

6.2.1.2 The Role of Mimetic Mechanisms in Explaining ISP Effectiveness through Senior Management Participation in ISP

Sub research question 1.2: What is the influence of mimetic mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Mimetic isomorphisms refer to external forces that motivate a firm to modify itself by imitating other organisations (DiMaggio & Powell, 1983; Guler et al., 2002). The research findings showed

a significantly positive relationship between mimetic mechanisms and senior management participation in ISP ($\beta=0.45$, $t=5.72$, $p < 0.001$). Nevertheless, the mediating effect of senior management participation in ISP was insignificant. It means that the mimetic mechanism does not directly influence ISP effectiveness. It positively influences senior managers' participation in ISP and in turn, leads to a higher level of ISP effectiveness. If the ISP adoption practices of other organisations, such as competitors, suppliers, customers, and others, are perceived as beneficial, senior managers are more likely to participate in promoting ISP. The perceived benefits affect senior managers' belief and their actual participation in ISP activities. The research finding is in line with previous studies that have found a positive relationship between mimetic mechanisms and the level of senior management participation (e.g., Barton et al., 2016; Hassandoust et al., 2020; Liang et al., 2007). For example, Liang and colleagues (2007) found that mimetic forces impact senior management's observations and perceptions and in turn, lead to a higher level of participation in organisational changes. Barton and colleagues (2016) suggest that mimetic mechanisms are the dominant factors in driving Infosys security assimilation in organisations. Organisations tend to copy the best Infosys security practices implemented by other organisations to reduce spending on their own resources. Senior managers recognise those benefits and promote organisational changes to achieve them, which in turn leads to an improvement in ISP effectiveness. Hassandoust and colleagues (2020) also indicate the role of mimetic mechanisms – that is, impersonating the actions of successful organisations – in guiding top managers' perception and participation, which eventually leads to a reduction in uncertainty and the mitigation of risks and threats related to IS. However, the finding of this study contradicts that of Hu and colleagues (2007), who found that the role of mimetic mechanisms is ambiguous in IS. They maintain that IS violations spread and the lack of success stories regarding IS in the media reduces the perception of potential benefits. Furthermore, there are limited opportunities to learn about the IS best practices of other organisations that can be copied or mimicked (Hu et al., 2007).

6.2.1.3 The Role of Normative Mechanisms in Explaining ISP Effectiveness through Senior Management Participation in ISP

Sub research question 1.3: What is the influence of normative mechanisms on the effectiveness of ISP in organisations through the mediator role of senior management participation in ISP?

Normative mechanisms refer to the standards and norms created by groups with the same formal education or professional networks that others are forced to follow (DiMaggio & Powell, 1983). The research findings showed that there is no significant relationship between normative mechanisms and senior management participation in ISP ($\beta=-0.02$, $t=0.50$, $p = 0.616$). Moreover, the mediating effect of senior management participation in ISP and ISP effectiveness were found to be statistically insignificant. Thus, there is no influence of normative mechanisms on either senior management participation in ISP and ISP effectiveness. In the extant literature, Liang and colleagues (2007) emphasise the influence of normative mechanisms on senior management participation because “norms carry with them accepted practices pre-evaluated within the organisational field without needing further cognitive effort on the part of top management” (p. 74). Top management faces normative pressures that influence their opinions and actions because of the potential benefits formed by the positive outcomes of past adoption (Sherer, 2010). Although this study found an insignificant influence of normative mechanisms on senior management participation, the research finding is in line with previous research (e.g., Barton et al., 2016; Dubey et al., 2019; Liang et al., 2007). The finding can be explained by the difficulties in differentiating and separating normative isomorphisms (Mizruchi & Fein, 1999). Liang et al. (2007) and Dubey et al. (2019) maintain that the insignificant results come from the conjecture of a study that a single informant cannot accurately interpret the extent of ISP adoption. Dubey and colleagues (2019) argue that the reason for insignificance is based on contextual differences. This study was conducted in Vietnam, which is a developing country with a socialist state and in the context of the financial industry in which financial organisations are controlled by SBV (SBV, 2011). Thus, the context might create contradictory results that need further studies to address.

6.2.2. The Role of Transformational Leadership in ISP Effectiveness through ISP Enforcement

Research Question 2: What is the influence of transformational leadership on the effectiveness of ISP in organisations through the mediator role of ISP enforcement?

Transformational leadership refers to a mechanism that focuses on the relationship between leaders and followers that is leveraged to gain employees' trust and respect and to push them to move beyond expectation (Bass, 1985, 1990; Bass & Avolio, 1990; Burns, 1978; Judge & Bono, 2000). The research found that transformational leadership positively influenced ISP enforcement ($\beta=0.67$, $t=12.74$, $p < 0.001$). It also found that ISP enforcement positively influenced the effectiveness of ISP ($\beta=0.23$, $t=2.62$, $p = 0.009$) and there was a partial mediating effect of ISP enforcement on the relationship between transformational leadership and ISP effectiveness. The results indicate that transformational leadership positively contributes to ISP effectiveness and ISP enforcement plays a mediator role that can provide a richer picture of the relationship between transformational leadership and ISP effectiveness. Organisations with transformational leaders tend to gain greater employee trust, respect, and commitment. In both their in-role and extra-role behaviours, employees are encouraged to move beyond legitimate reward systems and contribute to overall organisational effectiveness. In terms of ISP, transformational leadership helps employees gain awareness, understand more about IS practices, and better value ISP in the organisation as well as its benefits and costs. Thus, it reduces IS misuse behaviours, advances security compliance in the organisation, and promotes the effectiveness of IS management. This result has received theoretical support from previous research regarding the role of transformational leadership in organisational effectiveness (e.g., Bhattacharya, 2011; Choi, 2016; Flores & Ekstedt, 2016; Guhr et al., 2019; Ritu et al., 2018; Viator, 2001). Viator (2001) proposes that transformational leadership behaviours can improve organisational commitment directly, or indirectly through role clarity and the satisfaction of followers. Transformational leaders' effectiveness in communication and their inspiration helps employees understand their responsibilities and increases their desire to go beyond expectation. Ritu and colleagues (2018) highlight the influence of transformational leadership in terms of promoting innovative

behaviours and reducing resistance to changes. Transformational leaders can inspire followers to proactively participate in ISP by setting high goals and providing real examples as well as encouraging them to re-think situations in their own way. Employees are more likely to understand the benefits of ISP, justify them as achievable goals, and move towards those goals. Hence, resistance to change will reduce and organisational compliance and performance will increase. In terms of IS, Choi (2016) indicates that transformational leadership can enforce ISP in organisations, which enhances Infosys security effectiveness in these organisations. The persuasion, assistance, and direction of transformational leaders can provide employees with a detailed understanding of IS and promote their compliance behaviours, which will eventually lead to an improvement in IS compliance and IS effectiveness. Flores and Ekstedt (2016) also agree that transformational leadership positively impacts IS awareness, involvement and commitment in organisations. Not only IS managers, but other non-IS managers that possess transformational leadership skills are capable of participating in, developing, and advancing IS management (Choi, 2016). Guhr and colleagues (2019) suggest that transformational leaders do not have to be IS-oriented; generalised transformational leadership can also improve employees' ISP compliance intention and IS management. Thus, transformational leadership should be shared and adopted across organisations to support ISP management.

6.2.3. The Moderator Role of SETA Programme

The SETA programme is introduced and implemented in organisations to enforce ISP (Barlow et al., 2018; Chen et al., 2015; D'Arcy & Hovav, 2009; D'Arcy et al., 2009). The SETA programme refers to policies and procedures to improve the awareness of ISP, reinforce skills and knowledge related to IS, and provide appropriate information about sanctions and punishments of IS violations (Chen et al., 2015; D'Arcy et al., 2009). The SETA programme can work as a mechanism to reduce IS misuse behaviours and encourage compliant behaviours by providing informational communication and normative communication (Barlow et al., 2018; D'Arcy et al., 2009). Thus, this study proposed the moderator role of the SETA programme in the relationship between ISP enforcement and ISP effectiveness. Although the research findings suggested that the moderating effect of the SETA programme is insignificant ($\beta=-0.01$, $t=0.51$, $p = 0.608$), the

SETA programme was found to directly influence ISP effectiveness ($\beta=0.51$, $t=5.25$, $p < 0.001$). In terms of the direct effect of the SETA programme, the findings of this study are in line with previous studies that have found there is a positive impact of the SETA programme on security policies commitment (Chen et al., 2015) and or security compliance (D'Arcy et al., 2009). The reason might be that the SETA programme directly influences employees' knowledge and perception about IS practices, which promotes their ISP compliance. However, in terms of strengthening the relationship between ISP enforcement and ISP effectiveness, instead of employee-related programmes (i.e., SETA), there might be other organisational factors such as organisational structure and culture that influence the relationship. These organisational factors can better explain organisational transformation and can fundamentally contribute to organisational performance (Chang & Ho, 2006). Previous studies have reported that organisational factors such as IT competence, environmental uncertainty, industry type, organisational structure, and organisational size can influence IS management in organisations (Chang & Ho, 2006; Steinbart et al., 2018; Tu & Yuan, 2014). Steinbart and colleagues (2018) highlight the role of another organisational factor – internal audit – in advancing IS by improving internal control measures and reducing harmful incidents. With sufficient support and authority from top management and sufficient IS reporting structures, internal audit can reinforce ISP enforcement and enhance ISP effectiveness. Furthermore, Chang and Ho (2006) found that organisational size and industry type can influence the performance of IS and that financial organisations are “relatively more sensitive to the effectiveness of IS security due to large potential losses resulting from IS security threat and abuse” (p. 356).

Chapter 7. Conclusions

A summary of the previous six chapters is presented in this chapter. The following section presents a summary of empirical findings to address the two underlying research questions. The next two sections discuss the theoretical and practical contributions of this study. Then, the limitations of this study and suggestions for future research are presented. Finally, the last section provides concluding remarks.

7.1. Summary of the Study

Overall, this study focused on investigating transformational leadership and the external factors that explain senior management participation in ISP, ISP enforcement, and ISP effectiveness. Drawing on neo-institutional theory and the transformational leadership framework, this study examined the literature on IS and ISP management. It provided an overview of previous studies to explain the factors that influence the effectiveness of ISP. Through the research questions and literature review, the theoretical research gaps were identified and justified as the motivation of this study. The literature on IS management, neo-institutional theory, and the transformational leadership framework provided an appropriate background on the role of external factors and transformational leadership behaviours and helped explain the effectiveness of ISP in an organisation. However, this study was encouraged by the need for more research to evaluate the determinants of the effectiveness of ISP from an organisational and managerial perspective instead of the individual perspective that has largely been the focus of recent studies (Pham & Hassandoust, 2020).

This study adopted three theoretical lenses – neo-institutional theory, the transformational leadership framework, and the IS management framework – to provide the theoretical arguments and support the research model in its evaluation of the influence of institutional mechanisms on senior management participation in ISP, the role of transformational leadership in ISP enforcement, and the contributions of those predictors in explaining the effectiveness of ISP. The research model was developed with independent variables: three first-order neo-institutional mechanisms constructs – coercive mechanisms, mimetic mechanisms, and normative

mechanisms –, second-order transformational leadership construct, first-order SETA constructs and first-order dependent variables, senior management participation in ISP, ISP enforcement, and ISP effectiveness.

An online survey method was adopted in this study. The data was collected from professional managers who were aware or in charge of security-related policies in financial institutions (e.g., banks) in Vietnam. In total, a dataset of 207 responses was used in this study to test and evaluate the research model. A PLS-SEM technique was adopted for a reliability and validity test and structural model assessment.

The study then reported the results of the hypothesised relationships in the research model and the mediating and moderating relationships in the structural model. Overall, all hypotheses of this study were supported except for Hypothesis 3 and Hypothesis 7. The research findings showed that coercive and mimetic mechanisms positively influence senior management participation in ISP. Transformational leadership was found to positively influence ISP enforcement. This study also found that senior management participation in ISP and ISP enforcement positively impacts ISP effectiveness in an organisation and that there is no mediating effect of senior management participation in ISP on the relationship between institutional mechanisms and ISP effectiveness. On the other hand, it was found that ISP enforcement partially mediates the relationship between transformational leadership and ISP effectiveness. Finally, results showed that there is no moderating effect of the SETA programme on the relationship between ISP enforcement and ISP effectiveness. Overall, these research findings are mostly consistent with the extant literature. Thus, theoretical and practical contribution can be drawn from the results. This study suggests that external factors and transformational leadership play an important role in IS management. Organisations can develop effective IS strategy and investigate the root cause of ISP issues by evaluating the institutional mechanisms in the market or the internal enforcement system. This study also recommends the adoption of transformational leadership that can lead to a higher level of enforcement, leading to ISP effectiveness in an organisation.

7.2. Theoretical Contributions

This study offers a better understanding of IS management through its evaluation of the effectiveness of IS from an organisational and managerial perspective instead of an individual level. To improve the performance of IS, developing an effective IS strategy and policies to control and enhance employees' compliance is critical (Teh et al., 2015; Von Solms, 2001). According to the IS literature, top management plays a crucial role in improving employees' compliance and security culture (Bulgurcu et al., 2010; Herath & Rao, 2009; Ifinedo, 2012; Puhakainen & Siponen, 2010; Vance et al., 2012) and developing effective ISP within organisations (Kankanhalli et al., 2003; Knapp & Ferrante, 2014; Knapp et al., 2007; Steinbart et al., 2018). Moreover, without sufficient enforcement, employees tend to become involved in non-compliance IS activities (Bulgurcu et al., 2010; Herath & Rao, 2009; Kajtazi et al., 2018). Most IS studies have focused on predictors that affect employees' compliance and there has been a lack of attention to organisational-level forces as factors that motivate the commitment of top managers, as well as how to improve the enforcement of ISP in organisations. Thus, this study focused on investigating IS management from a managerial and organisational perspective.

The low-commitment level of senior management or the board to IS has been highlighted for several decades as an antecedent of IS violations (Ahmad et al., 2014; Chang & Ho, 2006; EY, 2020; ISACA, 2019; Von Solms, 2001). Senior management commitment to IS helps maintain ISP employees' compliance by providing ISP-related awareness, perception, and enforcement that reduce violating behaviours, thus advancing IS and effective ISP management (Barton et al., 2016; Choi, 2016; Daud et al., 2018; Knapp & Ferrante, 2012; Knapp et al., 2007; Veiga & Eloff, 2007). Therefore, there is a need to evaluate the predictors of senior management participation in ISP. Neo-institutional theory can explain the commitment of senior management based on coercive, mimetic, and normative mechanisms that can affect organisational decisions through the mediator role of top management beliefs and participation. Neo-institutional mechanisms refer to external factors in the environment that motivate firms to modify themselves to survive and be successful (DiMaggio & Powell, 1983; Hu et al., 2007; Meyer & Rowan, 1977). This study extends the neo-institutional theory research that has mostly been conducted in other aspects, such

as website adoption (Flanagin, 2000), IT adoption (Tingling & Parent, 2002), electronic data interchange adoption (Teo et al., 2003), IT investment decisions (Hu & Quan, 2006), ERP assimilation (Liang et al., 2007), IS practices (Hu et al., 2007), and security culture (Hassandoust et al., 2020), rather than the performance of ISP. The research findings of this study confirmed the relationship between external factors and the participation level of senior managers in the context of ISP. Coercive and mimetic mechanisms were found to significantly promote the participation of senior managers in ISP, leading to a higher level of ISP effectiveness.

Drawing on the transformational leadership framework, this study examined the role of transformational leadership in ISP enforcement and ISP effectiveness. Although several studies have focused on the role and optimal performance of transformational leadership in organisational commitment (Dvir et al., 2002; Judge & Piccol, 2004; Kark et al., 2003; Lowe et al., 1996; Podsakoff et al., 1990; Price & Weiss, 2013) and emphasised the critical role of employees' commitment to IS management (Bulgurcu et al., 2010; D'Arcy et al., 2009; Herath & Rao, 2009; Puhakainen & Siponen, 2010; Vance et al., 2012), there has been inadequate attention to how transformational leadership can promote the management and effectiveness of IS in organisations. This study's finding regarding the positive influence of transformational leadership on ISP enforcement and ISP effectiveness extends the transformational leadership framework in the context of ISP. Previous studies have focused on deterrence theory, which suggests employees tend to reduce IS violations as a result of top management support in developing and ensuring the certainty of sanctions and the severity of sanctions (Beebe & Rao, 2005; Kankanhalli et al., 2003; Knapp et al., 2007). In line with IS deterrence studies, this study extends the literature by confirming that transformational leadership can work as a mechanism to promote IS disincentives by providing employees with enough understanding of the benefits and costs of compliance and violating behaviours and optimally enforcing IS deterrents without damaging the relationship between leaders and followers. For instance, transformational leaders that demonstrate high performance expectations of their subordinates can enhance followers' awareness and sense of responsibility towards excellence and quality and minimise the chance of IS threats that can severely damage an organisation's financial status and reputation (Ahmad et al., 2019; EY, 2020; ISACA, 2019). Transformational leaders can also provide specific examples of compliant and

non-compliant IS behaviours to illustrate the benefits and costs of compliance within an organisation. This helps employees to understand the net benefits/losses of criminal acts against IS, thus preventing them from committing those acts and promoting safe behaviours in the workplace (Ahmad et al., 2019; Beebe & Rao, 2005; Kankanhalli et al., 2003). Transformational leadership can promote relational leadership by focusing on the bonds between leaders and followers and also the relationship with stakeholder groups (Podsakoff et al., 1990). Therefore, transformational leadership creates subordinates trust and respect as well as an open environment in which to share IS-related knowledge, implement IS practices, and advance IS management (Moon et al., 2018). The unique findings of this study are presented in Table 7.1.

Table 7.1*Summary of Theoretical Contributions of This Study*

What is Known from the Literature	Unique Findings of this Study
<p>Previous studies have discussed the role of senior management in enhancing the effectiveness of IS by improving employees' compliance (Bulgurcu et al., 2010; Herath & Rao, 2009; Ifinedo, 2012; Puhakainen & Siponen, 2010; Vance et al., 2012) and developing effective ISP (Kankanhalli et al., 2003; Knapp & Ferrante, 2014; Knapp et al., 2007; Steinbart et al., 2018). However, most IS research has been conducted on an individual level instead of a managerial level.</p>	<p>This study explored the managerial and organisational-level factors involved in ISP effectiveness. It also investigated the role of external factors in motivating senior management to participate in ISP and the impact of adopting transformational leadership to promote ISP enforcement. The research findings suggest that external factors can improve ISP effectiveness by influencing the participation of senior managers in ISP. Adopting transformational leadership can also promote ISP effectiveness through the mediator role of ISP enforcement.</p>
<p>Previous studies have suggested that external factors can influence the participation of top management in ISP practices and in turn lead to organisational decisions such as website adoption (Flanagin, 2000), IT adoption (Tingling & Parent, 2002), electronic data interchange adoption (Teo et al., 2003), IT investment decisions (Hu & Quan, 2006), ERP assimilation (Liang et al., 2007), and IS practices (Hu et al., 2007). Previous studies have also investigated the role of institutional forces in top management beliefs and participation in organisational activities (Barton et al., 2016; Hassandoust et al., 2020; Liang et al., 2007)</p>	<p>This study further enhances the existing models in the literature and confirmed the importance of external factors, especially coercive and mimetic mechanisms, in senior management involvement in ISP practices within an organisation.</p>
<p>Previous studies have illustrated the positive impact of transformational leadership on organisational commitment and performance (Dvir et al., 2002; Judge & Piccol, 2004; Kark et al., 2003; Lowe et al., 1996; Podsakoff et al., 1990; Price & Weiss, 2013).</p>	<p>This study extends transformational leadership studies in the ISP context through its finding that the adoption of transformational leadership can improve ISP effectiveness in an organisation. Moreover, ISP enforcement can strengthen the relationship between transformational leadership and ISP effectiveness.</p>

7.3. Practical Contributions

In terms of practice, the results provide managers with an overall understanding of and effective guidance in IS management. This research also suggests practical implications for the

development, implementation, and enforcement of ISP to achieve the highest level of ISP effectiveness.

The research findings provide a better understanding of the critical external factors that may significantly influence ISP effectiveness. Empirical studies have argued that organisations' losses due to the negligence of employees (Chang & Lin, 2007; Chen et al., 2012; Hassandoust et al., 2020) can be mitigated by the role and support of senior managers. An implication of this study is that senior managers are recommended to actively participate in ISP, including developing, communicating, and enforcing it to drive IS efficiency. Liang and colleagues (2007) highlight the role of top management in the assimilation of IT innovations. In the context of security assimilation, Barton and colleagues (2016) recommended that governmental regulation and industry requirements can increase the level of commitment of senior managers. The information shared among government organisations and industry groups in IS security can foster senior management participation in ISP and advance the ISP of organisations. Managers should seek to understand the external factors related to IS and the business value of ISP as this will positively impact their level of commitment to organisational ISP. With a higher level of participation in security activities, managers can gain a better understanding of the security policies and practices required in their organisations and be better able to provide more related training and coaching, incentives, and appropriate support for employees to drive ISP effectiveness. Among three types of external mechanisms that influence the effectiveness of ISP, mimetic forces were found to be more dominant, which indicates that senior managers are more likely to be influenced by other organisations in the industry. Apart from the compulsory requirements of governmental regulators, senior managers might find it helpful to promote ISP practices and protocols adopted in other organisations to compete with them and survive in the market. This study may provide senior managers and organisations with a better understanding of factors from the external environment that influences organisational decisions. Organisations can evaluate and take advantage of these mechanisms to motivate the commitment of senior managers in ISP and enhance ISP management.

Empirical evidence suggests that employees' non-compliance behaviours might be a result of management and organisational level issues, such as organisations' use of ineffective security awareness programmes, or because ISP is not successfully enforced (Bulgurcu et al., 2010; Herath & Rao, 2009; Kajtazi et al., 2018). Rather than considering that the effectiveness of ISP is dependent on employees' compliance, this research might be able to provide an effective strategy for investigating the root cause of ISP issues from different aspects and supports top management in creating, implementing, and controlling ISP, ultimately increasing an organisation's well-being and economic wealth. According to the findings of this study, the adoption of transformational leadership can effectively improve ISP enforcement. Transformational leaders are found to successfully obtain employees' trust and respect. Leaders can transfer, support, and inspire employees with the visions and benefits of ISP and thereby achieve collective agreement on ISP. Managers are suggested to clearly communicate the perceived costs and the severity of non-compliance activities to employees to help reduce IS misuse behaviours. This research found that six key behaviours of transformational leadership – identifying and articulating a vision, providing an appropriate model, fostering the acceptance of group goals, presenting high performance expectations, and providing individualised support and intellectual stimulation – should be considered as a guideline for senior managers in an organisation, especially when launching, implementing, and monitoring organisational ISP. Furthermore, certifications in IS and the job tenure of senior managers in a management role can also provide a useful direction for the board of management. Managers who participate with more certification in IS and more years in a management role were shown to more effectively manage ISP with the necessary knowledge and experience. Organisations can consider managers' certifications and job tenure when initiating or implementing a new ISP. The results indicated that the knowledge, experience, and especially the leadership of senior managers play a critical and crucial role in improving ISP effectiveness. The research findings might help organisations when evaluating the competence of senior managers and constructing a human resources development plan.

In the context of the banking and finance sector, the intensive amount of sensitive information this sector deals with requires organisations to develop and maintain the effectiveness of IS to reduce severe losses due to IS violations (Teh et al., 2015; Von Solms, 2001). Chang and Ho

(2006) found that the ISP effectiveness of financial companies is extremely sensitive to losses from IS threats, while Muhammad Shoukat and Urooj (2019) reported the consequences of cybercrime incidents and raised the need for IS awareness in the banking sector. Therefore, this study underscores the importance of IS and security techniques in minimising the chance of IS breaches in the financial industry. The research findings also highlight the critical role of external factors, senior management, and ISP enforcement in the financial industry that should be taken into consideration by senior managers when seeking to develop effective IS management. In order to reduce the chance of IS losses by financial firms, losses which are considered more severe than in other industries, banks and financial institutions are suggested be aware of the external factors in the market such as forces from governmental regulation (e.g., SBV), financial associations, competitors, and customers. Furthermore, IS enforcement is both necessary and inevitable when seeking to minimise leakages and losses of information. This study confirms that transformational leadership behaviours can promote IS protocol and policy enforcement within organisations. According to the findings, setting a high-performance expectation is recommended as it emphasises the need for zero non-compliance activities and empowers employees to comply with ISP. Therefore, this research helps financial firms better understand the driving factors in ISP effectiveness in organisations and provides them with a list of managerial factors that should be taken into consideration to minimise losses.

7.4. Limitations of the Study and Future Studies

Despite the useful implications for research and practice, this study also has limitations that need to be addressed in future studies. First, the cross-sectional design of using a single point of time in the data collection method, as opposed to taking a longitudinal approach, might restrain the implications of this study. Adoption and implementation of IS might take a long time to execute and may change over time, while external factors might vary over industries and periods. Moreover, there might be some difficulties in drawing causal relationships based on cross-sectional data (Rindfleisch et al., 2008). Therefore, this creates a need for future studies to observe changes in the evaluation of senior managers over time through a longitudinal study. The causal

relationships between neo-institutional mechanisms, transformational leadership, and ISP effectiveness can be strengthened by using a longitudinal study design.

Second, the respondents of this study were managers in financial firms in Vietnam only, which could represent a sample selection bias. Therefore, the generalisation process of this study's findings is limited. Vietnam is a developing country with a socialist state that might differ from other developed or capitalist countries. The State Bank of Vietnam has power over financial institutions' operational activities that might dominate other external factors and bias the research findings. Future studies need to be conducted in the context of other countries to generalise the findings of this study.

Third, the measurement strategy of this research could have resulted in bias as the respondents were managers who evaluated the ISP themselves. The results might be different if ISP was assessed by employees of organisations. Thus, future studies might conduct research on both managerial and employee perspectives (multi-level study) to extend the implications.

7.5. Concluding Remarks

This study applied neo-institutional theory and the transformational leadership framework to examine ISP effectiveness in an organisation. The study utilised an explanatory approach with the data collected from managers who were aware or in charge of ISP in financial firms in Vietnam. The research provides a comprehensive review of the IS management framework by examining the role of senior management participation in ISP and ISP enforcement in relation to the efficiency of ISP. This research provides theoretical and practical contributions by applying neo-institutional theory to investigate the external factors that influence ISP effectiveness and using the transformational leadership framework to evaluate the role of transformational leadership in relation to the effectiveness of ISP in an organisation. From a practical point of view, the results of this study provide organisations with knowledge of external factors that affect ISP effectiveness and the importance of managers' knowledge, experience, and leadership skills in IS management.

References

- Ahmad, A., Maynard, S. B., & Park, S. (2014, 2014/04/01). Information security strategies: towards an organizational multi-strategy perspective. *Journal of Intelligent Manufacturing*, 25(2), 357-370. <https://doi.org/10.1007/s10845-012-0683-0>
- Ahmad, Z., Ong Thian, S., Liew Tze, H., & Norhashim, M. (2019). Security monitoring and information security assurance behaviour among employees: An empirical analysis. *Information & Computer Security*, 27(2), 165-188. <https://doi.org/10.1108/ICS-10-2017-0073>
- Avolio, B. (2004, 01/01). Leadership development in balance: MADE/born. *Leadership Development in Balance: MADE/Born*, 1-234. <https://doi.org/10.4324/9781410611819>
- Barlow, J. B., Warkentin, M., Ormond, D., & Dennis, A. R. (2018). Don't Even Think About It! The Effects of Antineutralization, Informational, and Normative Communication on Information Security Compliance. *Journal of the Association for Information Systems*, 19(8), 689-715. <https://doi.org/10.17705/1jais.00506>
- Baron, R., & Kenny, D. (1986, 01/01). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182. <https://doi.org/10.1037//0022-3514.51.6.1173>
- Barton, K. A., Tejay, G., Lane, M., & Terrell, S. (2016, 2016/06/01/). Information system security commitment: A study of external influences on senior management. *Computers & Security*, 59, 9-25. <https://doi.org/https://doi.org/10.1016/j.cose.2016.02.007>
- Bass, B., Avolio, B., Jung, D., & Berson, Y. (2003, 05/01). Predicting Unit Performance by Assessing Transformational and Transactional Leadership. *The Journal of Applied Psychology*, 88, 207-218. <https://doi.org/10.1037/0021-9010.88.2.207>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. New York: The Free Press.
- Bass, B. M. (1990, Winter90). From Transactional to Transformational Leadership: Learning to Share the Vision. *Organizational Dynamics*, 18(3), 19-31. [https://doi.org/10.1016/0090-2616\(90\)90061-S](https://doi.org/10.1016/0090-2616(90)90061-S)
- Bass, B. M., & Avolio, B. J. (1990). Developing Transformational Leadership: 1992 and Beyond. *Journal of European Industrial Training*, 14(5), 21-27. <https://doi.org/10.1108/03090599010135122>
- Beebe, N., & Rao, S. (2005, 01/01). Using Situational Crime Prevention Theory to Explain the Effectiveness of Information Systems Security. In Proceedings of the 2005 SoftWares Conference, Las Vegas, NV (pp. 1-18).
- Bhattacharya, D. (2011). Leadership styles and information security in small businesses. *Information Management & Computer Security*, 19(5), 300-312. <https://doi.org/10.1108/09685221111188593>
- Bjorck, F. (2004, 5-8 Jan. 2004). Institutional theory: a new perspective for research into IS/IT security in organisations. Proceedings of the 37th Annual Hawaii International Conference on System Sciences, 2004, pp. 5, doi: 10.1109/HICSS.2004.1265444.
- Blaikie, N. W. H. (2000). *Designing social research : the logic of anticipation*. Polity Press.
- Blumstein, A. (1978). *Deterrence and incapacitation: Estimating the effects of criminal sanctions on crime rates*. National Academy Press.
- Bruch, H., & Walter, F. (2007). Leadership in context: investigating hierarchical impacts on transformational leadership. *Leadership & Organization Development Journal*, 28(8), 710-726. <https://doi.org/10.1108/01437730710835452>
- Bryman, A., & Bell, E. (2007). *Business research methods*. Oxford: Oxford University Press.
- Bulgurcu, B., Cavusoglu, H., & Benbasat, I. (2010). Information security policy compliance: an empirical study of rationality-based beliefs and information security awareness. *MIS Quarterly*, 34(3), 523-548.
- Burns, J. M. (1978). *Leadership*. New York: Harper & Row.
- Cavusoglu, H., Cavusoglu, H., Son, J.-Y., & Benbasat, I. (2015, 2015/06/01/). Institutional pressures in security management: Direct and indirect influences on organizational investment in information security control resources. *Information & Management*, 52(4), 385-400. <https://doi.org/https://doi.org/10.1016/j.im.2014.12.004>

- Chang, E. S., & Ho, C. B. (2006). Organizational factors to the effectiveness of implementing information security management. *Industrial Management & Data Systems*, 106(3), 345-361. <https://doi.org/10.1108/02635570610653498>
- Chang, E. S., & Lin, C. S. (2007). Exploring organizational culture for information security management. *Industrial Management & Data Systems*, 107(3), 438-458. <https://doi.org/10.1108/02635570710734316>
- Chen, P., Kataria, G., & Krishnan, R. (2011). Correlated Failures, Diversification, and Information Security Risk Management. *MIS Quarterly*, 35(2), 397-422. <https://doi.org/10.2307/23044049>
- Chen, Y., Ramamurthy, K., & Wen, K.-W. (2012, Winter2012). Organizations' Information Security Policy Compliance: Stick or Carrot Approach?. *Journal of Management Information Systems*, 29(3), 157-188. <https://doi.org/10.2753/MIS0742-1222290305>
- Chen, Y., Ramamurthy, K., & Wen, K.-W. (2015, 2015/03/01). Impacts of Comprehensive Information Security Programs on Information Security Culture. *Journal of Computer Information Systems*, 55(3), 11-19. <https://doi.org/10.1080/08874417.2015.11645767>
- Chin, W. W. (2010). Bootstrap Cross-Validation Indices for PLS Path Model Assessment. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares: Concepts, Methods and Applications* (pp. 83-97). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_4
- Choi, M. (2016). Leadership of Information Security Manager on the Effectiveness of Information Systems Security for Secure Sustainable Computing. *Sustainability*, 8(7), 1-21. <https://www.mdpi.com/2071-1050/8/7/638>
- Corti, L., Day, A., & Backhouse, G. (2000). Confidentiality and Informed Consent: Issues for Consideration in the Preservation of and Provision of Access to Qualitative Data Archives. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research; Vol 1, No 3 (2000): Text . Archive . Re-Analysis*. <https://doi.org/10.17169/fqs-1.3.1024>
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed-Method Approaches*. In (Third edition. ed.). Thousand Oaks, California: Sage Publications.
- Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage Publications.
- D'Arcy, J., & Hovav, A. (2009). Does One Size Fit All? Examining the Differential Effects of IS Security Countermeasures. *Journal of Business Ethics*, 89, 59-71. <https://doi.org/10.1007/s10551-008-9909-7>
- D'Arcy, J., Hovav, A., & Galletta, D. (2009). User Awareness of Security Countermeasures and Its Impact on Information Systems Misuse: A Deterrence Approach. *Information Systems Research*, 20(1), 79-98. <https://doi.org/10.1287/isre.1070.0160>
- Daud, M., Rasiah, R., George, M., Asirvatham, D., & Thangiah, G. (2018). Bridging the gap between organisational practices and cyber security compliance: Can cooperation promote compliance in organisations?. *International Journal of Business & Society*, 19(1), 161-180. <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=128886146&site=ehost-live&scope=site>
- David, J. (2002, 2002/10/01/). Policy enforcement in the workplace. *Computers & Security*, 21(6), 506-513. [https://doi.org/https://doi.org/10.1016/S0167-4048\(02\)01006-4](https://doi.org/https://doi.org/10.1016/S0167-4048(02)01006-4)
- Dey, M. (2007). Information security management-a practical approach. AFRICON 2007 (pp. 1-6). IEEE.
- DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, 48(2), 147-160. <https://doi.org/10.2307/2095101>
- Dubey, R., Gunasekaran, A., Childe Stephen, J., Papadopoulos, T., & Helo, P. (2019). Supplier relationship management for circular economy: Influence of external pressures and top management commitment. *Management Decision*, 57(4), 767-790. <https://doi.org/10.1108/MD-04-2018-0396>
- Dutta, A., & McCrohan, K. (2002, 10/01). Management's Role in Information Security in a Cyber Economy. *California Management Review*, 45(1), 67-87. <https://doi.org/10.2307/41166154>

- Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Impact of Transformational Leadership on Follower Development and Performance: A Field Experiment. *The Academy of Management Journal*, 45(4), 735-744. <https://doi.org/10.2307/3069307>
- EY. (2020). *EY Global Information Security Survey*. https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/advisory/ey-global-information-security-survey-2020.pdf
- Feng, N., Wang, H. J., & Li, M. (2014, 2014/01/20/). A security risk analysis model for information systems: Causal relationships of risk factors and vulnerability propagation analysis. *Information Sciences*, 256, 57-73. <https://doi.org/https://doi.org/10.1016/j.ins.2013.02.036>
- Flanagin, A. J. (2000, 2000/10/01). Social pressures on organizational website adoption. *Human Communication Research*, 26(4), 618-646. <https://doi.org/https://doi.org/10.1111/j.1468-2958.2000.tb00771.x>
- Flores, W. R., & Ekstedt, M. (2016). Shaping intention to resist social engineering through transformational leadership, information security culture and awareness. *Computers & Security*, 59, 26-44. <https://doi.org/10.1016/j.cose.2016.01.004>
- Gartner. (2020a). *Gartner Forecasts Worldwide Security and Risk Management Spending Growth to Slow but Remain Positive in 2020*. <https://www.gartner.com/en/newsroom/press-releases/2020-06-17-gartner-forecasts-worldwide-security-and-risk-managem>
- Gartner. (2020b). *Gartner Says Worldwide IT Spending to Grow 4% in 2021*. <https://www.gartner.com/en/newsroom/press-releases/2020-10-20-gartner-says-worldwide-it-spending-to-grow-4-percent-in-2021>
- Gefen, D., Rigdon, E. E., & Straub, D. (2011). Editor's Comments: An Update and Extension to SEM Guidelines for Administrative and Social Science Research. *MIS Quarterly*, 35(2), iii-xiv. <https://doi.org/10.2307/23044042>
- Gefen, D., Straub, D., & Boudreau, M.-c. (2000, 12/22). Structural Equation Modeling And Regression: Guidelines For Research Practice. *Communications of the Association for Information Systems*, 4. <https://doi.org/10.17705/1CAIS.00407>
- Gilbert, C., De Winne, S., & Sels, L. (2011). Antecedents of front-line managers' perceptions of HR role stressors. *Personnel Review*, 40(5), 549-569. <https://doi.org/10.1108/00483481111154432>
- Goo, J., Yim, M.-S., & Kim, D. (2014, 12/01). A Path to Successful Management of Employee Security Compliance: An Empirical Study of Information Security Climate. *Professional Communication, IEEE Transactions*, 57, 286-308. <https://doi.org/10.1109/TPC.2014.2374011>
- Goodhue, D., Lewis, W., & Thompson, R. (2006, 4-7 Jan. 2006). PLS, Small Sample Size, and Statistical Power in MIS Research. Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS'06),
- Gordon, L. A., & Loeb, M. P. (2002). The Economics of Information Security Investment. *ACM Transactions on Information and System Security*, 5(4), 438-457. <https://doi.org/10.1145/581271.581274>
- Gray, D. E. D. (2004). *Doing Research in the Real World*. London: SAGE Publications. <http://ebookcentral.proquest.com/lib/aut/detail.action?docID=354875>
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In *Handbook of qualitative research*. (pp. 105-117). Sage Publications, Inc.
- Guba, E. G., & Lincoln, Y. S. (2005). Paradigmatic Controversies, Contradictions, and Emerging Confluences. In *The Sage handbook of qualitative research, 3rd ed.* (pp. 191-215). Sage Publications Ltd.
- Guhr, N., Lebek, B., & Breitner, M. H. (2019, 03/01/). The impact of leadership on employees' intended information security behaviour: An examination of the full-range leadership theory. *INFORMATION SYSTEMS JOURNAL*, 29(2), 340-362. <https://doi.org/10.1111/isj.12202>
- Guler, I., Guillén, M. F., & Macpherson, J. M. (2002, 2002/06/01). Global Competition, Institutions, and the Diffusion of Organizational Practices: The International Spread of ISO 9000 Quality Certificates. *Administrative Science Quarterly*, 47(2), 207-232. <https://doi.org/10.2307/3094804>

- Hagen, J., Albrechtsen, E., & Hovden, J. (2008, 10/10). Implementation and effectiveness of organizational information security measures. *Inf. Manag. Comput. Security*, 16, 377-397. <https://doi.org/10.1108/09685220810908796>
- Hair, J., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed. ed.). Los Angeles : SAGE. <http://lib.ugent.be/catalog/rug01:002301564>
- Hair, J., Ringle, C., & Sarstedt, M. (2011, 03/01). PLS-sem: Indeed a silver bullet. *The Journal of Marketing Theory and Practice*, 19, 139-151. <https://doi.org/10.2753/MTP1069-6679190202>
- Hair, J., Sarstedt, M., Ringle, C., & Mena, J. (2012, 03/01). An Assessment of the Use of Partial Least Squares Structural Equation Modeling in Marketing Research. *Journal of the Academy of Marketing Science*, 40, 414–433. <https://doi.org/10.1007/s11747-011-0261-6>
- Hair, J. F. (2014). *A primer on partial least squares structural equations modeling (PLS-SEM)*. Los Angeles: SAGE.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2-24. <https://doi.org/10.1108/eb-11-2018-0203>
- Harmon, R., & Auseklis, N. (2009). *Sustainable IT services: Assessing the impact of green computing practices*. <https://doi.org/10.1109/PICMET.2009.5261969>
- Hassandoust, F., Nuwangi, S. M., & Johnston, A. C. (2020). The Establishment of Information Security Knowledge Sharing in Organizations: Antecedents and Consequences. Pacific Asia Conference on Information Systems (PACIS) 2020, 244. Wellington, New Zealand. <https://aisel.aisnet.org/pacis2020/244>
- Haveman, H. A. (1993). Follow the Leader: Mimetic Isomorphism and Entry Into New Markets. *Administrative Science Quarterly*, 38(4), 593-627. <https://doi.org/10.2307/2393338>
- Henseler, J., & Fassott, G. (2010). Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares: Concepts, Methods and Applications* (pp. 713-735). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_31
- Henseler, J., Ringle Christian, M., & Sinkovics Rudolf, R. (2009). The use of partial least squares path modeling in international marketing. In R. S. Rudolf & N. G. Pervez (Eds.), *New Challenges to International Marketing* (Vol. 20, pp. 277-319). Emerald Group Publishing Limited. [https://doi.org/10.1108/S1474-7979\(2009\)0000020014](https://doi.org/10.1108/S1474-7979(2009)0000020014)
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015, 2015/01/01). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135. <https://doi.org/10.1007/s11747-014-0403-8>
- Herath, T., & Rao, H. R. (2009, 2009/05/01/). Encouraging information security behaviors in organizations: Role of penalties, pressures and perceived effectiveness. *Decision Support Systems*, 47(2), 154-165. <https://doi.org/https://doi.org/10.1016/j.dss.2009.02.005>
- Hill, L. B., & Pemberton, J. M. (1995). Information security: An overview and resource guide for information managers. *Records Management Quarterly*, 29(1), 14-24. <https://ezproxy.aut.ac.nz/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=9502162137&site=eds-live>
- Hodgson, G. M. (2006). What Are Institutions? *Journal of Economic Issues*, 40(1), 1-25. <http://www.jstor.org/stable/4228221>
- Hsu, C., Lee, J.-N., & Straub, D. W. (2012). Institutional Influences on Information Systems Security Innovations. *Information Systems Research*, 23(3-part-2), 918-939. <https://doi.org/10.1287/isre.1110.0393>
- Hsu, J. S.-C., Shih, S.-P., Hung, Y. W., & Lowry, P. B. (2015, 2015/06/01). The Role of Extra-Role Behaviors and Social Controls in Information Security Policy Effectiveness. *Information Systems Research*, 26(2), 282-300. <https://doi.org/10.1287/isre.2015.0569>

- Hu, Q., Dinev, T., Hart, P., & Cooke, D. (2012, 2012/08/01). Managing Employee Compliance with Information Security Policies: The Critical Role of Top Management and Organizational Culture. *Decision Sciences*, 43(4), 615-660.
<https://doi.org/https://doi.org/10.1111/j.1540-5915.2012.00361.x>
- Hu, Q., Hart, P., & Cooke, D. (2007, 2007/06/01/). The role of external and internal influences on information systems security – a neo-institutional perspective. *The Journal of Strategic Information Systems*, 16(2), 153-172.
<https://doi.org/https://doi.org/10.1016/j.jsis.2007.05.004>
- Hu, Q., & Quan, J. (2006). The Institutionalization of IT Budgeting: Empirical Evidence from the Financial Sector. *Information Resources Management Journal*, 19, 84-97.
- Hulland, J. (1999). Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies. *Strategic Management Journal*, 20(2), 195-204.
<http://www.jstor.org.ezproxy.aut.ac.nz/stable/3094025>
- Hwang, K., & Choi, M. (2017, 04 / 01 /). Effects of innovation-supportive culture and organizational citizenship behavior on e-government information system security stemming from mimetic isomorphism. *Government Information Quarterly*, 34(2), 183-198. <https://doi.org/10.1016/j.giq.2017.02.001>
- Ifinedo, P. (2012, 2012/02/01/). Understanding information systems security policy compliance: An integration of the theory of planned behavior and the protection motivation theory. *Computers & Security*, 31(1), 83-95.
<https://doi.org/https://doi.org/10.1016/j.cose.2011.10.007>
- ISACA. (2019). *State of Cybersecurity 2019*. https://www.isaca.org/cyber/Documents/state-of-cybersecurity_res_eng_0316.pdf
- Jang-Jaccard, J., & Nepal, S. (2014, 2014/08/01/). A survey of emerging threats in cybersecurity. *Journal of Computer and System Sciences*, 80(5), 973-993.
<https://doi.org/https://doi.org/10.1016/j.jcss.2014.02.005>
- Jansen, J., Vera, D., & Crossan, M. (2009, 02/01). Strategic Leadership for Exploration and Exploitation: The Moderating Role of Environmental Dynamism. *The Leadership Quarterly*, 14, 5-18. <https://doi.org/10.1016/j.leaqua.2008.11.008>
- Jarvenpaa, S. L., & Ives, B. (1991). Executive involvement and participation in the management of information technology. *MIS Quarterly: Management Information Systems*, 15(2), 205-223. <https://doi.org/10.2307/249382>
- Jarvis, C., MacKenzie, S., & Podsakoff, P. (2003, 02/01). A Critical Review of Construct Indicators and Measurement Model Specification in Marketing and Consumer Research. *Journal of Consumer Research*, 30, 199-218. <https://doi.org/10.1086/376806>
- Jiang, K., Chuang, C.-H., & Chiao, Y.-C. (2015). Developing collective customer knowledge and service climate: The interaction between service-oriented high-performance work systems and service leadership. *Journal of Applied Psychology*, 100(4), 1089-1106.
<https://doi.org/10.1037/apl0000005>
- Johnson, A. M. (2009, 2009/01/01). Business and Security Executives Views of Information Security Investment Drivers: Results from a Delphi Study. *Journal of Information Privacy and Security*, 5(1), 3-27. <https://doi.org/10.1080/15536548.2009.10855855>
- Johnston, A., & Warkentin, M. (2010, 09/01). Fear Appeals and Information Security Behaviors: An Empirical Study. *MIS Quarterly*, 34, 549-566.
<https://doi.org/10.2307/25750691>
- Joshi, A., Kale, S., Chandel, S., & Pal, D. (2015, 01/10). Likert Scale: Explored and Explained. *British Journal of Applied Science & Technology*, 7, 396-403.
<https://doi.org/10.9734/BJAST/2015/14975>
- Judge, T. A., & Bono, J. E. (2000). Five-factor model of personality and transformational leadership. *Journal of Applied Psychology*, 85(5), 751-765.
<https://doi.org/10.1037/0021-9010.85.5.751>
- Judge, T. A., & Piccol, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755-768.
<https://doi.org/10.1037/0021-9010.89.5.755>
- Kahai, S., Sosik, J., & Avolio, B. (2003, 08/01). Effects of Leadership Style, Anonymity, and Rewards on Creativity-Relevant Processes and Outcomes in an Electronic Meeting

- System Context. *Leadership Quarterly*, 14, 499-524. [https://doi.org/10.1016/S1048-9843\(03\)00049-3](https://doi.org/10.1016/S1048-9843(03)00049-3)
- Kaiser, K. (2009, 2009/11/01). Protecting Respondent Confidentiality in Qualitative Research. *Qualitative Health Research*, 19(11), 1632-1641. <https://doi.org/10.1177/1049732309350879>
- Kajtazi, M., Cavusoglu, H., Benbasat, I., & Haftor, D. (2018). Escalation of commitment as an antecedent to noncompliance with information security policy. *Information & Computer Security*, 26(2), 171-193. <https://doi.org/10.1108/ICS-09-2017-0066>
- Kankanhalli, A., Teo, H.-H., Tan, B. C. Y., & Wei, K.-K. (2003, 2003/04/01/). An integrative study of information systems security effectiveness. *International Journal of Information Management*, 23(2), 139-154. [https://doi.org/https://doi.org/10.1016/S0268-4012\(02\)00105-6](https://doi.org/https://doi.org/10.1016/S0268-4012(02)00105-6)
- Kark, R., Shamir, B., & Chen, G. (2003). The two faces of transformational leadership: empowerment and dependency. *Journal of Applied Psychology*, 88(2), 246-255. <https://doi.org/10.1037/0021-9010.88.2.246>
- Kevin, K. E., Barling, J., & Helleur, J. (2000). Enhancing transformational leadership: the roles of training and feedback. *Leadership & Organization Development Journal*, 21(3), 145-149. <https://doi.org/10.1108/01437730010325022>
- Kivunja, C., & Kuyini, A. B. (2017, 09/05). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6, 26-41. <https://doi.org/10.5430/ijhe.v6n5p26>
- Knapp, K., & Ferrante, C. (2012). Policy Awareness, Enforcement and Maintenance: Critical to Information Security Effectiveness in Organizations. *Journal of Management Policy and Practice*, 13, 66-80.
- Knapp, K., & Ferrante, C. (2014). Information Security Program Effectiveness in Organizations: The Moderating Role of Task Interdependence. *Journal of Organizational and End User Computing*, 26, 27-46.
- Knapp, K., Marshall, T., Jr, R., & Ford, F. (2006, 01/01). Information security: Management's effect on culture and policy. *Information Management & Computer Security*, 14, 24-36. <https://doi.org/10.1108/09685220610648355>
- Knapp, K. J., Marshall, T., Rainer, R. K., & Ford, F. (2007). Information Security Effectiveness: Conceptualization and Validation of a Theory. *International Journal of Information Security and Privacy (IJISP)*, 1(2), 37-60. <https://doi.org/10.4018/jisp.2007040103>
- Kritzinger, E., & Smith, E. (2008). Information security management: An information security retrieval and awareness model for industry. *Computers & Security*, 27(5), 224-231. <https://doi.org/https://doi.org/10.1016/j.cose.2008.05.006>
- Lanz, J., & Sussman, B. I. (2020). Information Security Program Management in a COVID-19 World. *CPA Journal*, 90(6), 28-35. <https://ezproxy.aut.ac.nz/login?url=https://search.ebscohost.com/login.aspx?direct=true&site=eds-live&db=bth&AN=144364481>
- Leavy, P. (2017). *Research design : quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. The Guilford Press. <http://ebookcentral.proquest.com/lib/AUT/detail.action?docID=4832778>
- Lee, Y., & Larsen, K. R. (2009, 2009/04/01). Threat or coping appraisal: determinants of SMB executives' decision to adopt anti-malware software. *European Journal of Information Systems*, 18(2), 177-187. <https://doi.org/10.1057/ejis.2009.11>
- Lewis-Beck, M. S., Bryman, A., & Liao, T. F. (2004). *The Sage encyclopedia of social science research methods*. Sage.
- Liang, H., Saraf, N., Hu, Q., & Xue, Y. (2007). Assimilation of Enterprise Systems: The Effect of Institutional Pressures and the Mediating Role of Top Management. *MIS Quarterly*, 31(1), 59-87. <https://doi.org/10.2307/25148781>
- Lowe, K., & Gardner, W. (2000, 12/01). Ten Years of The Leadership Quarterly: Contributions and Challenges for the Future. *The Leadership Quarterly*, 11, 459-514. [https://doi.org/10.1016/S1048-9843\(00\)00059-X](https://doi.org/10.1016/S1048-9843(00)00059-X)
- Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996, 1996/09/01/). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of

- the mlq literature. *The Leadership Quarterly*, 7(3), 385-425.
[https://doi.org/https://doi.org/10.1016/S1048-9843\(96\)90027-2](https://doi.org/https://doi.org/10.1016/S1048-9843(96)90027-2)
- Lun, Y. H. V., Wong, C. W. Y., Lai, K. H., & Cheng, T. C. E. (2008, 2008/01/01). Institutional Perspective on the Adoption of Technology for the Security Enhancement of Container Transport. *Transport Reviews*, 28(1), 21-33.
<https://doi.org/10.1080/01441640701358804>
- Malhotra, M. K., & Grover, V. (1998, 1998/07/01/). An assessment of survey research in POM: from constructs to theory. *Journal of Operations Management*, 16(4), 407-425.
[https://doi.org/https://doi.org/10.1016/S0272-6963\(98\)00021-7](https://doi.org/https://doi.org/10.1016/S0272-6963(98)00021-7)
- Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common Method Variance in Is Research: A Comparison of Alternative Approaches and a Reanalysis of past Research. *Management Science*, 52(12), 1865-1883. <http://www.jstor.org/stable/20110660>
- Matell, M., & Jacoby, J. (1971, 10/01). Is There an Optimal Number of Alternatives for Likert-Scale Items? Study I. *Educational and Psychological Measurement*, 31, 657-674.
<https://doi.org/10.1177/001316447103100307>
- Matthews, L., Hair, J., & Matthews, R. (2018). PLS-SEM : The Holy Grail For Advanced Analysis. *Marketing Management Journal*, 28(1), 1-13.
- McFadzean, E., Ezingard, J.-N., & Birchall, D. (2006, 01/01). Anchoring information security governance research: Sociological groundings and future directions. *Journal of Information System Security*, 2(3), 3-48.
- Meyer, J. W., & Rowan, B. (1977, 1977/09/01). Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology*, 83(2), 340-363.
<https://doi.org/10.1086/226550>
- Mihaela, C. L. (2020). Current security threats in the national and international context. *Accounting & Management Information Systems / Contabilitate si Informatica de Gestiune*, 19(2), 351-378. <https://doi.org/10.24818/jamis.2020.02007>
- Mink, M., & Greifeneder, R. (2010). Evaluation of the Offensive Approach in Information Security Education. Security and Privacy – Silver Linings in the Cloud, Berlin, Heidelberg.
- Mishra, S., Snehlata, S., & Srivastava, A. (2014). Information Security Behavioral Model: Towards Employees Knowledge and Attitude. *Journal of Telematics and Informatics*, 2, 22-28.
- Mizuchi, M. S., & Fein, L. C. (1999). The Social Construction of Organizational Knowledge: A Study of the Uses of Coercive, Mimetic, and Normative Isomorphism. *Administrative Science Quarterly*, 44(4), 653-683. <https://doi.org/10.2307/2667051>
- Moon, Y. J., Choi, M., & Armstrong, D. (2018). The impact of relational leadership and social alignment on information security system effectiveness in Korean governmental organizations. *International Journal of Information Management*, 40, 54-66.
- Mostafa, A. M. S., & Shen, J. (2020). Ethical leadership, internal CSR, organisational engagement and organisational workplace deviance. Evidence-based HRM: a Global Forum for Empirical Scholarship, 8(1), 113-127. <https://doi.org/10.1108/EBHRM-03-2019-0026>
- Muhammad Shoukat, M., & Urooj, I. (2019, 01/07/). Cybercrime: an emerging threat to the banking sector of Pakistan. *Journal of Financial Crime*, 26(1), 50-60.
<https://doi.org/10.1108/JFC-11-2017-0118>
- Nanjundeswaraswamy, D., & Swamy, D. R. (2014, 03/01). Leadership styles. *Advances In Management*, E-ISSN No.: 2278-4551, 7.
- Neuman, W. L. (2011). *Social research methods : qualitative and quantitative approaches* (Seventh edition. ed.). Allyn & Bacon.
- Newsted, P. R., Huff, S. L., & Munro, M. C. (1998). Survey instruments in information systems. *MIS Quarterly*, 22(4), 553–554. <https://doi.org/10.2307/249555>
- Niehoff, B. P., Enz, C. A., & Grover, R. A. (1990, 1990/09/01). The Impact of Top-Management Actions on Employee Attitudes and Perceptions. *Group & Organization Studies*, 15(3), 337-352. <https://doi.org/10.1177/105960119001500307>
- North, D. C. (1991). Institutions. *Journal of Economic Perspectives*, 5(1), 97-112.
<https://doi.org/10.1257/jep.5.1.97>

- Park, S. H., & Luo, Y. (2001). Guanxi and organizational dynamics: organizational networking in Chinese firms. *Strategic Management Journal*, 22(5), 455-477.
<https://doi.org/https://doi.org/10.1002/smj.167>
- Peikoff, L. (1991). *Objectivism : The Philosophy of Ayn Rand*. Dutton.
- Pham, T., & Hassandoust, F. (2020). The Role of External Mechanisms and Transformational Leadership in Information Security Policy Effectiveness: A Managerial Perspective of Financial Industry in Vietnam. Australasian Conference on Information Systems (ACIS) 2020, 79, Wellington, New Zealand. <https://aisel.aisnet.org/acis2020/79>
- Phillips, D. C. (1987). *Philosophy, science, and social inquiry : contemporary methodological controversies in social science and related applied fields of research*. Pergamon Press.
- Piccolo, R., & Colquitt, J. (2006, 04/01). Transformational Leadership and Job Behaviors: The Mediating Role of Core Job Characteristics. *Academy of Management Journal*, 49.
<https://doi.org/10.5465/AMJ.2006.20786079>
- Pierro, A., Raven, B., Amato, C., & Bélanger, J. (2012, 10/16). Bases of social power, leadership styles, and organizational commitment. *International journal of psychology : Journal internationale de psychologie*, 48.
<https://doi.org/10.1080/00207594.2012.733398>
- Pierro, A., Raven, B. H., Amato, C., & Bélanger, J. J. (2013). Bases of social power, leadership styles, and organizational commitment. *International Journal of Psychology*, 48(6), 1122-1134. <https://doi.org/10.1080/00207594.2012.733398>
- Podsakoff, P., MacKenzie, S., Lee, J.-Y., & Podsakoff, N. (2003, 11/01). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *The Journal of applied psychology*, 88, 879-903.
<https://doi.org/10.1037/0021-9010.88.5.879>
- Podsakoff, P., MacKenzie, S., Moorman, R., & Fetter, R. (1990, 06/01). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *The Leadership Quarterly*, 1, 107-142.
[https://doi.org/10.1016/1048-9843\(90\)90009-7](https://doi.org/10.1016/1048-9843(90)90009-7)
- Preacher, K. J., & Hayes, A. F. (2008, Aug). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891. <https://doi.org/10.3758/brm.40.3.879>
- Price, M. S., & Weiss, M. R. (2013, 2013/04/01). Relationships among Coach Leadership, Peer Leadership, and Adolescent Athletes' Psychosocial and Team Outcomes: A Test of Transformational Leadership Theory. *Journal of Applied Sport Psychology*, 25(2), 265-279. <https://doi.org/10.1080/10413200.2012.725703>
- Puhakainen, P., & Siponen, M. (2010). Improving Employees' Compliance Through Information Systems Security Training: An Action Research Study. *MIS Quarterly*, 34(4), 757-778. <https://doi.org/10.2307/25750704>
- Putnam, H. (1999). *The Threefold Cord: Mind, Body, and World* (Vol. 112). Columbia University Press.
- PwC. (2020). *PwC's Global Economic Crime and Fraud Survey*.
<https://www.pwc.com/gx/en/forensics/gecs-2020/pdf/global-economic-crime-and-fraud-survey-2020.pdf>
- Rafferty, A. E., & Griffin, M. A. (2004, 2004/06/01). Dimensions of transformational leadership: Conceptual and empirical extensions. *The Leadership Quarterly*, 15(3), 329-354. <https://doi.org/https://doi.org/10.1016/j.leaqua.2004.02.009>
- Rindfleisch, A., Malter, A. J., Ganesan, S., & Moorman, C. (2008, 2008/06/01). Cross-Sectional versus Longitudinal Survey Research: Concepts, Findings, and Guidelines. *Journal of Marketing Research*, 45(3), 261-279. <https://doi.org/10.1509/jmkr.45.3.261>
- Ritu, T., Rajesh Kumar, U., Mohit, Y., Santosh, R., & Reena, S. (2018, 11/12/). The impact of transformational leadership on employees' acceptance to change : Mediating effects of innovative behaviour and moderating effect of the use of information technology. *VINE Journal of Information and Knowledge Management Systems*, 48(4), 559-578.
<https://doi.org/10.1108/VJKMS-05-2018-0039>
- Rohmeyer, P. (2006). *An evaluation of information security management effectiveness* Stevens Institute of Technology.
- Sayer, A. (2000). *Realism and Social Science* <https://doi.org/10.4135/9781446218730>

- SBV. (2011). *Annual Report*.
<https://www.sbv.gov.vn/webcenter/ShowProperty?nodeId=/UCMServer/CNTHWEBA/P01162395542//idcPrimaryFile&revision=latestreleased>
- Scott, W. (2001). *Institutions and Organizations*. Thousand Oaks, California: Sage Publications.
- Seeholzer, R. (2012). *Information Security Strategy: In Search of a Role*. AMCIS.
- Searle, J. R. (1995). *The Construction of Social Reality* (Vol. 2). Free Press.
- Searle, J. R. (2005). What is an institution? *Journal of Institutional Economics*, 1(1), 1-22.
<https://doi.org/10.1017/S1744137405000020>
- Sherer, S. A. (2010). Information systems and healthcare XXXIII: An institutional theory perspective on physician adoption of electronic health records. *Communications of the Association for Information Systems*, 26(1), 127-140.
<https://doi.org/10.17705/1cais.02607>
- Singer, E., Von Thurn, D. R., & Miller, E. R. (1995). Confidentiality Assurances and Response: A Quantitative Review of the Experimental Literature. *The Public Opinion Quarterly*, 59(1), 66-77. www.jstor.org/stable/2749650
- Sosik, J. J. (1997, 1997/12/01). Effects of Transformational Leadership and Anonymity on Idea Generation in Computer-Mediated Groups. *Group & Organization Management*, 22(4), 460-487. <https://doi.org/10.1177/1059601197224004>
- Steinbart, P. J., Raschke, R., Gal, G., & Dilla, W. N. (2018). The influence of a good relationship between the internal audit and information security functions on information security outcomes. *Accounting Organizations and Society*, 71, 15-29.
- Straub, D., Boudreau, M.-C., & Gefen, D. (2004). Validation Guidelines for IS Positivist Research. *Communications of the Association for Information Systems*, 13, 24.
- Straub Jr, D. W. (1990). Effective IS security: An empirical study. *Information Systems Research*, 1(3), 255-276. <https://doi.org/10.1287/isre.1.3.255>
- Streukens, S., & Leroi-Werelds, S. (2016, 12 / 01 /). Bootstrapping and PLS-SEM: A step-by-step guide to get more out of your bootstrap results. *European Management Journal*, 34(6), 618-632. <https://doi.org/10.1016/j.emj.2016.06.003>
- Suddaby, R. (2010, 2010/03/01). Challenges for Institutional Theory. *Journal of Management Inquiry*, 19(1), 14-20. <https://doi.org/10.1177/1056492609347564>
- Teh, P. L., Ahmed, P. K., & D'Arcy, J. (2015). What Drives Information Security Policy Violations among Banking Employees?: Insights from Neutralization and Social Exchange Theory. *Journal of Global Information Management (JGIM)*, 23(1), 44-64. <https://doi.org/10.4018/jgim.2015010103>
- Teo, H., Wei, K., & Benbasat, I. (2003). Predicting Intention to Adopt Interorganizational Linkages: An Institutional Perspective. *MIS Quarterly*, 27(1), 19-49.
<https://doi.org/10.2307/30036518>
- Tingling, P., & Parent, M. (2002, 01/01). Mimetic Isomorphism and Technology Evaluation: Does Imitation Transcend Judgment? *Journal of the Association for Information Systems*, 3, 0. <https://doi.org/10.17705/1jais.00025>
- Tolbert, P. S., & Zucker, L. (1996). The Institutionalization of Institutional Theory.
- Tu, Z., & Yuan, Y. (2014). Critical Success Factors Analysis on Effective Information Security Management: A Literature Review. AMCIS,
- Urbach, N., & Ahlemann, F. (2010, 01/01). Structural equation modeling in information systems research using Partial Least Squares. *Journal of Information Technology Theory and Application*, 11.
- Vance, A., Siponen, M., & Pahnla, S. (2012, 2012/05/01/). Motivating IS security compliance: Insights from Habit and Protection Motivation Theory. *Information & Management*, 49(3), 190-198. <https://doi.org/https://doi.org/10.1016/j.im.2012.04.002>
- Veiga, A. D., & Elof, J. H. P. (2007, 2007/10/02). An Information Security Governance Framework. *Information Systems Management*, 24(4), 361-372.
<https://doi.org/10.1080/10580530701586136>
- Viator, R. E. (2001, Fall2001). The Relevance of Transformational Leadership to Nontraditional Accounting Services: Information Systems Assurance and Business Consulting. *Journal of Information Systems*, 15(2), 99. <https://doi.org/10.2308/jis.2001.15.2.99>

- Von Solms, B. (2001, 2001/05/01/). Corporate Governance and Information Security. *Computers & Security*, 20(3), 215-218. [https://doi.org/https://doi.org/10.1016/S0167-4048\(01\)00305-4](https://doi.org/https://doi.org/10.1016/S0167-4048(01)00305-4)
- Wall, J. D., Palvia, P., & Lowry, P. B. (2013, 2013/10/01). Control-Related Motivations and Information Security Policy Compliance: The Role of Autonomy and Efficacy. *Journal of Information Privacy and Security*, 9(4), 52-79. <https://doi.org/10.1080/15536548.2013.10845690>
- Walumbwa, F., Avolio, B., Gardner, W., Wernsing, T., & Peterson, S. (2008, 03/01). Authentic Leadership: Development and Validation of a Theory-Based Measure†. *Journal of Management*, 34, 89-126. <https://doi.org/10.1177/0149206307308913>
- Weber, M., Henderson, A. M., & Parsons, T. (1947). *The theory of social and economic organization, 1st Amer. ed.* Oxford University Press.
- Wiles, R., Crow, G., Heath, S., & Charles, V. (2008, 2008/12/01). The Management of Confidentiality and Anonymity in Social Research. *International Journal of Social Research Methodology*, 11(5), 417-428. <https://doi.org/10.1080/13645570701622231>
- Yoo, C. W., Goo, J., & Rao, H. R. (2020). Is Cybersecurity a Team Sport? A Multilevel Examination of Workgroup Information Security Effectiveness. *MIS Q.*, 44.
- Zucker, L. G. (1987). Institutional Theories of Organization. *Annual Review of Sociology*, 13, 443-464. <http://www.jstor.org/stable/2083256>

Appendices

Appendix A – Ethics Application Approval



Auckland University of Technology Ethics Committee (AUTEK)

Auckland University of Technology

D-88, Private Bag 92006, Auckland 1142, NZ

T: +64 9 921 9999 ext. 8316

E: ethics@aut.ac.nz

www.aut.ac.nz/researchethics

7 September 2020

Farkhondeh Hassandoust
Faculty of Business Economics and Law

Dear Farkhondeh

Re Ethics Application: **20/229 The role of external mechanisms and transformational leadership in information security policy effectiveness: A financial industry in Vietnam perspective**

Thank you for providing evidence as requested, which satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEK).

Your ethics application has been approved for three years until 3 September 2023.

Non-Standard Conditions of Approval

1. Update the Information Sheet with the new title of the research.

Non-standard conditions must be completed before commencing your study. Non-standard conditions do not need to be submitted to or reviewed by AUTEK before commencing your study.

Standard Conditions of Approval

1. The research is to be undertaken in accordance with the Auckland University of Technology Code of Conduct for Research and as approved by AUTEK in this application.
2. A progress report is due annually on the anniversary of the approval date, using the EA2 form.
3. A final report is due at the expiration of the approval period, or, upon completion of project, using the EA3 form.
4. Any amendments to the project must be approved by AUTEK prior to being implemented. Amendments can be requested using the EA2 form.
5. Any serious or unexpected adverse events must be reported to AUTEK Secretariat as a matter of priority.
6. Any unforeseen events that might affect continued ethical acceptability of the project should also be reported to the AUTEK Secretariat as a matter of priority.
7. It is your responsibility to ensure that the spelling and grammar of documents being provided to participants or external organisations is of a high standard and that all the dates on the documents are updated.

AUTEK grants ethical approval only. You are responsible for obtaining management approval for access for your research from any institution or organisation at which your research is being conducted and you need to meet all ethical, legal, public health, and locality obligations or requirements for the jurisdictions in which the research is being undertaken.

Please quote the application number and title on all future correspondence related to this project.

For any enquiries please contact ethics@aut.ac.nz. The forms mentioned above are available online through <http://www.aut.ac.nz/research/researchethics>

(This is a computer-generated letter for which no signature is required)

The AUTEK Secretariat

Auckland University of Technology Ethics Committee

Cc: mpham@aut.ac.nz

Appendix B – Participant Information Sheet – English Version



Participant Information Sheet

Date Information Sheet Produced:

02 Sep 2020

Project Title

The Role of External Mechanisms and Transformational Leadership in Information Security Policy Effectiveness: A Financial Industry Perspective

An Invitation

Greetings, my name is Thai Pham. I am a master student at Auckland University of Technology (AUT). Currently, I am conducting research on information security policy effectiveness and I would like to invite you to participate in this study. Your participation is voluntary and will take approximately 15 minutes of your valuable time. You are not obligated to participate in this research and able to stop the survey at any time before completion. I am conducting a draw in which 20 respondents will win a \$25 gift card from Amazon.

What is the purpose of this research?

This research project plans to investigate the impact of institutional factors and transformational leadership elements on the effectiveness of information security policy in a financial firm. Institutional factors refer to environmental factors motivate firms to modify themselves according to those factors to be succeed in the market. Transformational leadership refers to mechanisms of the leaders that push the followers to achieve beyond expectation but still engage in strong emotional connection with followers. The findings of this research might be used for publication.

How was I identified and why am I being invited to participate in this research?

You have been invited to participate in this project because you currently work for a financial firm (bank/ financial company) in Vietnam who are at management level and in charge or aware of information security policies of your firm. Your input will be valuable in helping to investigating the important elements affecting the effectiveness of information security policies.

How do I agree to participate in this research?

Your participation in this research is voluntary (it is your choice) and whether or not you choose to participate will neither advantage nor disadvantage you. You will be sent a survey link. You are able to withdraw from the study at any time. If you choose to withdraw from the study, then you will be offered the choice between having any data that is identifiable as belonging to you removed or allowing it to continue to be used. However, once the findings have been produced, removal of your data may not be possible.

What will happen in this research?

You will be invited to a 15-minute online survey. The purpose of the survey is to ask about your demographic information (such as age, gender, etc) and your evaluation on institutional factors, transformational leadership elements and your company's information security policies effectiveness. I assure you that you will not be identified in any reports or publications from this study. I am conducting a draw in which 20 respondents will win a \$25 gift card from Amazon. At the end of the survey, you will be redirected to a website where you can enter the prize draw. Only complete answers will be included in the draw and the winners will be randomly selected when the data collection is done.

What are the discomforts and risks?

There will not be any discomforts or risks in this research because the interview questions ask about your evaluation regarding information security policies without identifying who you are. Your participation is voluntary.

How will these discomforts and risks be alleviated?

Your answers will not be shared with anyone else outside of this research team. You can withdraw your data up to the end of data collection.

What are the benefits?

The benefit for you could be the opportunity to reflect on the current status of your organisation's information security policies. The findings will help your company find out the most important institutional factors and the key transformational leadership elements that significantly influence the information security policy effectiveness as well as their implication.

How will my privacy be protected?

Your participation is voluntary. All the data you provide will remain confidential. No party or person other than the research team will have access to the data. After the project is completed, all the information will be securely destroyed after a period of six years.

What are the costs of participating in this research?

There are no costs to you for participating in this research except for approximately 15 minutes of your time for answering the survey, which is much appreciated.

What opportunity do I have to consider this invitation?

You will be given at least one month to fill up the web survey since you have received the survey link. If there is any further information or clarification required, you can directly contact the primary researcher on his details below.

Will I receive feedback on the results of this research?

Respondents can access the findings of this research project from Mar 2021 to May 2021 via OneDrive shared folder (https://autuni-my.sharepoint.com/:f/g/personal/tdq1974_autuni_ac_nz/EuHz-7LEQP5AoW-GMJgfyUgBhq6sp0SrAbHdALEZ-Da5Ug?e=UJMhff)

What do I do if I have concerns about this research?

Any concerns regarding the nature of this project should be notified in the first instance to the Project Supervisor, *Farkhondeh Hassandoust*, ferry@aut.ac.nz, (09) 921-9999 ext 5419.

Concerns regarding the conduct of the research should be notified to the Executive Secretary of AUTEK, ethics@aut.ac.nz, (+649) 921 9999 ext 6038.

Whom do I contact for further information about this research?

Please keep this Information Sheet for your future reference. You are also able to contact the research team as follows:

Researcher Contact Details:

Thai Pham, Tdq1974@autuni.ac.nz, +840384233633

Project Supervisor Contact Details:

Farkhondeh Hassandoust, ferry@aut.ac.nz, (09) 921-9999 ext 5419.

Approved by the Auckland University of Technology Ethics Committee on 07/09/2020, AUTEK Reference number 20/229.

Appendix C – Participants Information Sheet – Vietnamese version



Bảng Thông Tin Đáp Viên

Thời gian xuất bản

02 Tháng Chín 2020

Mở đầu

Tiêu đề

Vai trò của Những Cơ chế Bên ngoài và Nguyên lý Lãnh đạo Chuyển đổi trong Sự hiệu quả của Các chính sách An toàn Thông tin: Dưới góc nhìn của ngành Tài Chính

Lời mời

Thân chào, tôi tên là Phạm Việt Thái. Tôi là sinh viên đang theo học Thạc sĩ tại trường Auckland University of Technology (AUT). Hiện tại, tôi đang làm một khảo sát về sự hiệu quả của các chính sách an toàn thông tin và muốn mời anh/chị làm một bài phỏng vấn. Sự tham gia của anh/chị là hoàn toàn tự nguyện và sẽ tốn 15 phút thời gian quý báu của anh/chị. Anh/chị không bắt buộc phải tham gia cuộc phỏng vấn này và có thể dừng phỏng vấn vào bất kỳ thời điểm nào trước khi kết thúc cuộc phỏng vấn. Sẽ có một giải thưởng trị giá \$25 phiếu mua hàng từ Amazon cho 20 đáp viên may mắn được lựa chọn ngẫu nhiên.

Mục đích của cuộc nghiên cứu này là gì?

Cuộc khảo sát này sẽ nghiên cứu về tác động của những nhân tố thể chế và nguyên lý lãnh đạo chuyển đổi lên sự hiệu quả của các chính sách an toàn thông tin trong tổ chức tài chính. Nhân tố thể chế là những nhân tố bên ngoài thúc đẩy doanh nghiệp điều chỉnh để phù hợp với những nhân tố đó để thành công trên thị trường. Nguyên lý lãnh đạo chuyển đổi là những cơ chế của lãnh đạo để động viên nhân viên hoàn thành vượt mong đợi các mục tiêu đề ra nhưng vẫn duy trì mối quan hệ chặt chẽ với nhân viên. Kết quả của cuộc nghiên cứu này sẽ có thể được xuất bản.

Tại sao anh/chị lại được mời để tham gia cuộc nghiên cứu này?

Anh/chị được mời tham gia cuộc nghiên cứu này vì anh/chị đang làm việc tại một công ty tài chính ở Việt Nam ở vị trí quản lý và có hiểu biết cũng như trách nhiệm về an toàn thông tin tại công ty của anh/chị. Những thông tin anh/chị cung cấp sẽ rất giá trị trong việc tìm hiểu các yếu tố quan trọng ảnh hưởng tới sự hiệu quả của các chính sách an toàn thông tin.

Anh/chị sẽ tham gia vào cuộc nghiên cứu này thế nào?

Sự tham gia của anh/chị trong cuộc nghiên cứu này tự nguyện (thể theo sự lựa chọn của anh/chị) và cuộc phỏng vấn này sẽ không có bất kỳ ảnh hưởng nào tới anh/chị. Anh/chị sẽ được nhận một đường dẫn của cuộc khảo sát. Anh/chị có thể thoát khỏi cuộc phỏng vấn bất kỳ lúc nào. Nếu anh/chị chọn ngừng phỏng vấn, anh/chị sẽ được lựa chọn giữa việc tiếp tục cho phép người nghiên cứu sử dụng thông tin anh/chị cung cấp cho cuộc phỏng vấn hoặc xóa toàn bộ thông tin đó khỏi cuộc phỏng vấn. Tuy nhiên, nếu như kết quả của cuộc phỏng vấn đã được hoàn thành, việc xóa thông tin đó có thể sẽ không thể thực hiện.

Chuyện gì sẽ diễn ra trong cuộc nghiên cứu?

Anh/chị sẽ được mời vào một cuộc phỏng vấn trực tuyến dài 15 phút. Mục đích của cuộc phỏng vấn là hỏi về thông tin nhân khẩu học của anh/chị (ví dụ như giới tính, tuổi, v.v.) và sự đánh giá của anh/chị về những nhân tố thể chế, nguyên lý quản lý chuyển đổi và sự hiệu quả của các chính sách bảo mật của công ty anh/chị. Tôi xin đảm bảo rằng danh tính của anh/chị sẽ không được đề cập đến ở bất kỳ báo cáo hay xuất bản nào từ nghiên cứu này. Sau khi phỏng vấn kết thúc, sẽ có một giải thưởng trị giá \$25 phiếu mua hàng từ Amazon cho 20 đáp viên may mắn được lựa chọn ngẫu nhiên. Vào cuối cuộc phỏng vấn, anh/chị sẽ được chuyển tới một trang web mà anh/chị có thể tham gia trúng thưởng. Chỉ những bài phỏng vấn hoàn thành trọn vẹn mới được tham gia rút thăm trúng thưởng và người trúng thưởng sẽ được chọn ngẫu nhiên khi việc thu thập dữ liệu hoàn thành.

Những rủi ro và ảnh hưởng là gì?

Sẽ không có bất kỳ ảnh hưởng hay rủi ro gì trong nghiên cứu này bởi vì toàn bộ câu hỏi phỏng vấn chỉ nghiên cứu về các chính sách an toàn thông tin, không hề tiết lộ bất kỳ thông tin cá nhân nào của anh/chị. Sự tham gia của anh/chị là hoàn toàn tự nguyện.

Những rủi ro và ảnh hưởng đó sẽ được giải quyết như thế nào?

Câu trả lời của anh/chị sẽ không được chia sẻ với bất kỳ ai ngoài nhóm nghiên cứu khảo sát này. Anh/chị có thể thu hồi lại thông tin của anh/chị trước khi cuộc phỏng vấn kết thúc.

Lợi ích của cuộc nghiên cứu này là gì?

Lợi ích của việc tham gia vào cuộc phỏng vấn này là anh/chị có thể đánh giá tình trạng hiện tại của các chính sách an toàn thông tin trong công ty anh/chị. Ngoài ra, kết quả của cuộc phỏng vấn sẽ tìm ra nhân tố thể chế quan trọng nhất và yếu tố quan trọng nhất trong nguyên lý quản lý chuyển đổi sẽ ảnh hưởng tới sự hiệu quả của các chính sách bảo mật và các ứng dụng của nó.

Thông tin cá nhân của anh/chị sẽ được bảo quản thế nào?

Sự tham gia của anh/chị là hoàn toàn tự nguyện. Mọi thông tin anh/chị cung cấp sẽ được giữ bí mật. Không bất kỳ tổ chức hay cá nhân nào ngoài nhóm nghiên cứu có quyền truy cập vào dữ liệu của anh/chị. Sau khi nghiên cứu kết thúc, toàn bộ thông tin sẽ được tiêu hủy một cách an toàn trong thời hạn 6 năm.

Chi phí cho việc tham gia nghiên cứu là gì?

Anh/chị sẽ không tốn bất kỳ chi phí nào khi tham gia cuộc phỏng vấn này ngoại trừ 15 phút thời gian trả lời câu hỏi, nhóm nghiên cứu rất trân trọng sự tham gia và thời gian của anh/chị.

Anh/chị sẽ có cơ hội gì nếu đồng ý tham gia vào cuộc nghiên cứu này?

Anh/chị sẽ có thời gian 1 tháng để hoàn thành cuộc phỏng vấn kể từ lúc nhận được đường dẫn phỏng vấn. Nếu anh/chị cần thêm bất kỳ thông tin nào, anh/chị có thể liên hệ trực tiếp người nghiên cứu chính qua thông tin cá nhân bên dưới.

Anh/chị có nhận được kết quả của cuộc nghiên cứu này hay không?

Anh/chị có thể tìm thấy kết quả của cuộc nghiên cứu này từ tháng 3 năm 2021 tới tháng 5 năm 2021 ở đường dẫn này (https://autuni-my.sharepoint.com/:f/g/personal/tdq1974_autuni_ac_nz/EuHz-7LEQP5AoW-GMJgfyUgBhq6sp0SrAbHdALEZ-Da5Ug?e=UJMhff)

Anh/chị sẽ làm gì nếu có bất kỳ vấn đề nào liên quan tới cuộc nghiên cứu?

Bất kỳ vấn đề nào liên quan tới dự án này nên được thông báo cho Quản Lý Dự Án, tiến sĩ Farkhondeh Hassandoust, email ferry@aut.ac.nz, (09) 921-9999 ext 5419.

Mọi vấn đề liên quan đến việc thực hiện nghiên cứu nên được thông báo cho Thư Ký Điều Hành của AUTECH, ethics@aut.ac.nz, (+649) 921 9999 ext 6038.

Ai là người liên hệ để biết thêm thông tin về cuộc nghiên cứu này?

Kính mong anh/chị giữ Bảng Thông tin này để tiện tham khảo trong tương lai. Anh/chị có thể liên hệ với nhóm nghiên cứu qua thông tin dưới đây

Thông tin liên lạc người nghiên cứu

Thai Pham, Tdq1974@autuni.ac.nz, +840384233633

Thông tin liên lạc Quản Lý Dự Án

Farkhondeh Hassandoust, ferry@aut.ac.nz, (09) 921-9999 ext 5419.

Được phê duyệt bởi Ủy Ban Đạo Đức Auckland University of Technology vào ngày 07/09/2020, số tham chiếu AUTECH 20/229

Appendix D – Questionnaire – English version

Criteria Question

Please provide information about your background below.

1. Are you currently working in a company listed in financial sector?
 - a. Yes
 - b. No
2. What is your role in your organisation?
 - a. Chief Executive Officer
 - b. Chief Information Officer
 - c. Chief Information Security Officer
 - d. A manager in IT department
 - e. A manager in Security department
 - f. Any type of manager who is in-charge or aware of policies related to information security in your organisation – Please specify
 - g. Other - Please specify
 - h. No management positions
3. Are you in-charge or aware of information security policies in your organisation?
 - a. Yes
 - b. No

Demographic Question

4. What is your gender?
 - a. Male
 - b. Female
 - c. Prefer not to say
5. What is your age?
 - a. Under 20 years
 - b. 21-30 years
 - c. 31-40 years
 - d. 41-50 years
 - e. Above 50 years
6. What is your education level?
 - a. High School Diploma
 - b. College
 - c. Bachelor
 - d. Postgraduate/Master or above

Control Variable

7. How many years have you been working in financial industry?
 - a. Less than 1 year
 - b. 1-5 years
 - c. 5-10 years
 - d. 10-15 years
 - e. More than 15 years
8. How many years have you been working at management level in a financial firm?
 - a. Less than 1 year
 - b. 1-5 years
 - c. 5-10 years
 - d. 10-15 years
 - e. More than 15 years
9. How many certificates do you have in relation to information security?
 - a. 0
 - b. 1 please identify
 - c. 2 please identify
 - d. 3 please identify
 - e. 4 please identify
 - f. More than 5 please identify

10. How many training or education days relating to information security do you take per year?
- 0
 - 1-
 - 5-10
 - More than 10

Main Questionnaire

The following questions seek your opinion about the **information security policies (ISP)** of your current company. Choose the number that most closely indicate the extent to which items represent your current company's ISP

Please pay attention to the below points:

You may come across similar questions in the next sections. We need to include similar questions to establish statistical reliability and validity.

ISP stands for Information Security Policies

Please indicate	Scale	Source
Coercive Mechanism	Strongly Disagree - 1 to Strongly Agree - 7	(Liang et al., 2007)
1. The local government requires our organisation to use ISP		
2. The industry association requires our organisation to use ISP		
3. The local competitive conditions require our organisation to use ISP		
Mimetic Mechanism Our main competitor who have adopted ISP (question 4, 5, 6)	Strongly Disagree - 1 to Strongly Agree - 7	
4. have greatly benefitted		
5. are favourably perceived by others in the same industry		
6. are favourably perceived by their suppliers and customers		
Normative Mechanism Please indicate (question 7, 8, 9)	Very Low - 1 to Very High - 5	
7. the extent of ISP adoption by your organisation's suppliers		
8. the extent of ISP adoption by your organisation's customers		
9. the extent to which the government's promotion of ISP influences your organisation to use		
Top Management Participation The senior management of our organisation actively (question 10, 11, 12)	Strongly Disagree - 1 to Strongly Agree - 7	
10. articulates a vision for the organisational use of ISP		
11. formulated a strategy for the organisational use of ISP		
12. established goals and standards to monitor the use of ISP		
Articulate Vision	Strongly Disagree - 1 to Strongly Agree - 7	(Viator, 2001)
13. I create an interesting picture of the future for our organisation's ISP practice area		
14. I have a clear understanding of where we are going in terms of ISP		
15. I inspire other employees with my ISP related plans for the future of our organisation		

16. I am able to get other employees committed to my ISP related dream of the future of our organisation		
17. I am always seeking new opportunity to improve our organisation's ISP		
Provide Model	Strongly Disagree - 1 to Strongly Agree - 7	
18. In terms of ISP compliance, I lead by "doing" rather than "telling".		
19. In terms of ISP compliance, I lead by examples and best practices		
20. In terms of ISP compliance, I provide good model for other employees to follow.		
Fostering Acceptance	Strongly Disagree - 1 to Strongly Agree - 7	(Viator, 2001)
21. I foster collaboration between my team and information security team.		
22. I develop team attitude and spirit among employees in order to comply with ISP.		
23. I encourage employees to be "team player" in relation to ISP compliance		
24. I encourage all teams to work together for the same goal towards the ISP compliance.		
High Performance Expectation	Strongly Disagree - 1 to Strongly Agree - 7	
25. I show employees that I expects a lot from them regarding ISP compliance		
26. I insist only on the best performance (zero ISP non-compliance)		
27. I will not settle for the second best, when it comes to ISP compliance		
Provide Individualised Support	Strongly Disagree - 1 to Strongly Agree - 7	
28. I respect my employees' feelings regarding ISP related activities		
29. I behave in a way that is thoughtful of my employees' personal needs regarding ISP related activities		
Intellectual Stimulation	Strongly Disagree - 1 to Strongly Agree - 7	
30. I provide my employees new ways of approaching ISP issues to make them think about possible solutions		
31. I force my employees to rethink some of their ISP related ideas.		
ISP Enforcement	Strongly Disagree - 1 to Strongly Agree - 7	(Knapp et al., 2006)
32. Employees caught violating ISP are appropriately corrected		
33. Information security rules are enforced by sanctioning the employees who break them		
34. Repeat security offenders are appropriately disciplined		
35. Termination is a consideration for employees who repeatedly break security rules		

SETA Program	Strongly Disagree - 1 to Strongly Agree - 7	(Chen et al., 2015)
36. In my organization, employees are briefed on the consequences of modifying organisation's data in an unauthorized way.		
37. My organization educates employees on their information security responsibilities.		
38. In my organization, employees are briefed on the consequences of accessing information systems that they are not authorized to use.		
ISP Effectiveness	Strongly Disagree - 1 to Strongly Agree - 7	(Hsu et al., 2015)
39. The ISP achieves most of its goals.		
40. The ISP accomplishes its most important objectives.		
41. Generally speaking, information in our organisation is sufficiently protected.		
42. Overall, the ISP is effective in our organisation.		
43. The information security program (policy) has kept our organisation's security losses to a minimum.		

Marker Variable: Please be patient and assist us by answering the following set of questions. They refer to Brand Image. Please answer these questions based on your 'gut' feeling. The exact answer is not important to us – but it is required for statistical calibration of the earlier questions.

Please consider your attitudes towards Vietnam Airlines' marketing and advertising campaigns from all media such as TV, Internet, magazines, radio and sponsorship activities. How much do you agree or disagree with each of the following statements about Vietnam Airlines?

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Thinks outside the square	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are warm and engaging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are daring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are spirited	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are imaginative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are up-to-date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank You for Completing Our Survey!

Thank you for taking time out to participate in this survey. We truly value the information you have provided. Your responses are vital for our research.

Appendix E – Questionnaire – Vietnamese version

Câu hỏi điều kiện

Vui lòng cung cấp thông tin về lý lịch của anh/chị qua những câu hỏi dưới đây

11. Anh/chị có đang làm việc cho một công ty tài chính ở Việt Nam không?
 - c. Có
 - d. Không
12. Vai trò của anh/chị trong công ty là gì?
 - a. Giám đốc điều hành
 - b. Giám đốc Công nghệ thông tin
 - c. Giám đốc An toàn thông tin
 - d. Quản lý trong bộ phận Công nghệ thông tin
 - e. Quản lý trong bộ phận An toàn thông tin
 - f. Các vị trí quản lý khác – người có hiểu biết hay trách nhiệm về các chính sách an toàn thông tin của công ty – Vui lòng ghi rõ vị trí
 - g. Các vị trí khác – Vui lòng ghi rõ vị trí
 - h. Không phải vị trí quản lý
13. Anh/chị có trách nhiệm hoặc hiểu biết về các chính sách an toàn thông tin của công ty không ?
 - a. Có
 - b. Không

Câu hỏi về nhân khẩu học

14. Giới tính của anh/chị là gì?
 - a. Nam
 - b. Nữ
 - c. Khác
15. Anh/chị bao nhiêu tuổi?
 - a. Dưới 20 tuổi
 - b. 21-30 tuổi
 - c. 31-40 tuổi
 - d. 41-50 tuổi
 - e. Trên 50 tuổi
16. Trình độ học vấn của anh/chị là gì?
 - a. Trung Học Phổ Thông
 - b. Cao Đẳng
 - c. Đại Học
 - d. Sau Đại Học/ Thạc sĩ hoặc cao hơn

Các biến kiểm soát

1. Anh/chị đã làm việc trong ngành tài chính bao nhiêu năm ?
 - a. Dưới 1 năm
 - b. 1-5 năm
 - c. 5-10 năm
 - d. 10-15 năm
 - e. Trên 15 năm
2. Anh/chị đã làm việc ở vị trí quản lý bao nhiêu năm?
 - a. Dưới 1 năm
 - b. 1-5 năm
 - c. 5-10 năm
 - d. 10-15 năm
 - e. Trên 15 năm
3. Anh/chị có bao nhiêu chứng chỉ liên quan tới an toàn thông tin
 - g. 1- Vui lòng ghi rõ
 - h. 2- Vui lòng ghi rõ
 - i. 3- Vui lòng ghi rõ
 - j. 4- Vui lòng ghi rõ
 - k. Nhiều hơn 5- Vui lòng ghi rõ
4. Anh/chị đã tham dự bao nhiêu buổi hướng dẫn liên quan tới an toàn thông tin hằng năm?

- e. 0
- f. 1-5
- g. 5-10
- h. Nhiều hơn 10

Bảng câu hỏi chính

Những câu hỏi dưới đây sẽ hỏi ý kiến anh/chị về các chính sách an toàn thông tin (CSATTT) của công ty hiện tại của anh/chị. Vui lòng lựa chọn con số thích hợp nhất miêu tả mức độ các câu hỏi thể hiện tình trạng hiện tại của công ty anh/chị

Vui lòng chú ý những điểm dưới đây:

Anh/chị sẽ gặp những câu hỏi gần giống nhau ở mục dưới. Chúng tôi cần thêm vào những câu hỏi gần giống nhau để tăng cường mức độ tin cậy và xác thực trong thống kê

CSATTT – các chính sách an toàn thông tin

Vui lòng đánh giá	Scale	Source
Cơ chế Ép buộc	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	(Liang et al., 2007)
1. Chính quyền địa phương bắt buộc công ty chúng tôi phải sử dụng các CSATTT		
2. Các tổ chức trong lĩnh vực tài chính bắt buộc công ty chúng tôi phải sử dụng các CSATTT		
3. Tình hình cạnh tranh nội địa bắt buộc công ty chúng tôi phải sử dụng các CSATTT		
Cơ chế Bắt chước Đối thủ cạnh tranh chính của chúng tôi sử dụng các CSATTT (câu hỏi 4,5,6)	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
4. đạt được rất nhiều lợi ích tốt.		
5. được ghi nhận tốt bởi các công ty khác trong cùng lĩnh vực.		
6. được ghi nhận tốt bởi khách hàng và nhà cung cấp.		
Cơ chế Quy chuẩn Vui lòng đánh giá	Rất thấp – 1 tới Rất cao - 5	
7. mức độ áp dụng các CSATTT của các nhà phân phối của công ty chúng tôi		
8. mức độ áp dụng các CSATTT của khách hàng của công ty chúng tôi		
9. mức độ mà chính quyền khuyến khích sử dụng CSATTT trong công ty chúng tôi		
Sự Tham gia của Quản lý cấp cao Các quản lý cấp cao trong công ty chúng tôi tích cực (câu hỏi 10, 11, 12)	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
10. truyền tải tầm nhìn cho toàn bộ công ty về việc sử dụng CSATTT		
11. xây dựng chiến lược cho toàn bộ công ty về việc sử dụng CSATTT		
12. đặt ra những mục tiêu và tiêu chuẩn để quản lý việc sử dụng các CSATTT		
Truyền tải Tầm nhìn	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	(Viator, 2001)
13. Tôi tạo ra những bức tranh thú vị về tương lai của công ty chúng tôi với các CSATTT.		
14. Tôi hiểu rõ chúng tôi đang hướng tới điều gì trong việc xây dựng CSATTT		
15. Tôi truyền cảm hứng cho các nhân viên khác về kế hoạch xây dựng CSATTT cho tương lai của công ty chúng tôi		

16. Tôi có thể đạt được sự đồng tình của các nhân viên khác trong việc xây dựng tương lai của công ty chúng tôi với các CSATTT		
17. I am always seeking new opportunity to improve our organisation's ISP		
18. Tôi luôn tìm kiếm cơ hội mới để phát triển CSATTT của công ty chúng tôi		
Cung cấp Hình mẫu	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
19. Liên quan tới việc tuân thủ CSATTT, tôi chỉ đạo qua việc “hành động” hơn là “sai bảo”		
20. Liên quan tới việc tuân thủ CSATTT, tôi chỉ đạo qua các ví dụ cụ thể và các biện pháp thực hành tốt nhất.		
21. Liên quan tới việc tuân thủ CSATTT, tôi cung cấp những hình mẫu tốt để các nhân viên khác noi theo.		
Thúc đẩy sự Đồng thuận	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	(Viator, 2001)
22. Tôi thúc đẩy sự hợp tác giữa nhóm của tôi và các nhóm liên quan tới ATTT		
23. Tôi phát triển tinh thần và thái độ của nhóm trong việc tuân thủ CSATTT		
24. Tôi động viên nhân viên tích cực trở thành một phần không thể thiếu trong việc tuân thủ CSATTT		
25. Tôi động viên tất cả các nhóm để làm việc cùng nhau cho lợi ích chung của công ty về các CSATTT		
Yêu cầu về Năng suất cao	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
26. Tôi thể hiện cho các nhân viên thấy rằng tôi mong đợi rất nhiều từ họ trong việc tuân thủ CSATTT		
27. Tôi luôn nhấn mạnh về việc hoàn thành tốt nhất (không có bất kỳ vi phạm nào liên quan tới CSATTT)		
28. Tôi không chấp nhận bất kỳ vi phạm nào liên quan tới CSATTT		
Cung cấp Những hỗ trợ Cá nhân	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
29. Tôi tôn trọng cảm xúc của nhân viên của mình về những vấn đề liên quan đến CSATTT		
30. Mọi hành động của tôi đều cho thấy sự quan tâm của tôi tới nhu cầu cá nhân của nhân viên về những vấn đề liên quan đến CSATTT		
Sự Khích lệ Tinh thần	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
31. Tôi cung cấp cho nhân viên của mình những hướng đi mới trong việc tiếp cận những vấn đề liên quan tới CSATTT và giúp họ tìm ra hướng giải quyết phù hợp.		
32. Tôi yêu cầu nhân viên phải tích cực suy nghĩ đa chiều về những vấn đề liên quan tới CSATTT		

Những Bất buộc trong CSATTT	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	(Knapp et al., 2006)
33. Nhân viên vi phạm CSATTT phải được sửa chữa một cách thích đáng.		
34. Những quy định về CSATT phải được đảm bảo bằng việc xử phạt nhân viên vi phạm		
35. Những nhân viên tái vi phạm các vấn đề liên quan tới CSATTT phải bị kỷ luật thích đáng.		
36. Xem xét buộc cho thôi việc những nhân viên tái vi phạm CSATTT nhiều lần		
Sự Hiệu quả của CSATTT	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	(Chen et al., 2015)
37. Các CSATTT đạt được hết các tầm nhìn đã được đề ra.		
38. Các CSATTT đạt được những mục tiêu quan trọng của công ty.		
39. Thông tin trong công ty được bảo mật tốt		(Hsu et al., 2015)
Các CSATTT trong công ty đạt được hiệu quả cao.	Hoàn toàn không đồng ý -1 tới Hoàn toàn đồng ý - 7	
40. Các CSATTT giảm thiểu tối đa các thiệt hại cho công ty.		
41. Vui lòng đánh giá		
42. Cơ chế Ép buộc		
43. Chính quyền địa phương bắt buộc công ty chúng tôi phải sử dụng các CSATTT		
44. Các tổ chức trong lĩnh vực tài chính bắt buộc công ty chúng tôi phải sử dụng các CSATTT		

Biểu đánh dấu: Kính mong anh/chị kiên nhẫn và hỗ trợ chúng tôi hoàn thành bài phỏng vấn bằng cách trả lời những câu hỏi dưới đây. Những câu hỏi đó liên quan tới hình ảnh thương hiệu. Vui lòng trả lời những câu hỏi đó dựa trên cảm nhận cá nhân của anh/chị. Kết quả của câu trả lời chỉ sử dụng cho việc hiệu chuẩn ý nghĩa thống kê của các câu hỏi phía trên.

Vui lòng đánh giá các chiến dịch marketing và quảng cáo của American Airline từ tất cả các phương tiện thông tin: TV, Internet, báo chí, radio và các hoạt động tài trợ. Anh/chị đồng ý hay không đồng ý với các đánh giá dưới đây về American Airlines?

	Hoàn toàn không đồng ý	Không đồng ý	Trung lập	Đồng ý	Hoàn toàn đồng ý
Có những suy nghĩ đột phá	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hấp dẫn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Táo bạo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Giàu ý nghĩa tinh thần	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Giàu sự tương trợ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hiện đại	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Chân thành cảm ơn sự tham gia của Anh/chị vào cuộc phỏng vấn!

Cảm ơn anh/chị đã dành thời gian quý báu để hoàn thành bài phỏng vấn này. Chúng tôi rất đánh giá cao những thông tin anh/chị cung cấp. Câu trả lời của anh/chị là hoàn toàn thiết yếu cho bài nghiên cứu của chúng tôi.

