

## Strategy for The Development of Information Security Policy Document: A Systematic Literature Review

Rishab Dixit<sup>1</sup>, Dr Pankaj Kumar<sup>2</sup>

M.techCSc. (2<sup>nd</sup>yr.) Student, Astit. Professor (Dept. of Computer Sc.) SRMCEM Lucknow

**Abstract:** The purpose of this research paper is to focus on strategic development of information security policy document and its management within the organization. The research work also surveyed the ways of information security policy development and its functions, development methods, policy lifecycle and scope of policy. In order to study the issue related to information security policy document and its implementation in organizations, a research analysis based on literature review is also accomplished. This systematic review will help all, the security specialists and senior management executive of any enterprise that plans to start development of security policy document and its implementation to make a better decision for the security of their assets.

**Keywords:** Information Security Policy, Organization Management and Data & Business Security.

### I. Introduction

All organizations are now required to protect the data & information. Information security policies allow protection of information and the whole infrastructure that supports easier use of information. To protect the critical information of an organization, security policy document is needed by organizations. Information security policy documents explain reasonable behaviour of an employee in order to secure the information through effective means of security policies & controls.

According to Dhillon, 1999, security awareness program should be raised with due support of the top management of organization to ensure hardware and software security. Vulnerability increases as the number of users, systems and applications used by system increases.

Effective implementation of Information security policy should be on higher priority for an organization management as given by Hone & Eloff (2002). Information Security Policy (ISP) document gives direction to management in support of Information Security as suggested by Peltier (2005).

An effective set of actions is also suggested by Gordon and Loeb (2006), to protect information systems of an organization.

It is not always the case that technological solution is required to solve technological problem of Information security. Information security involves risk management which consists of identification of threat and action taken for measuring threats in the organization for information assets. Integrity of organizations and loss of money may occur when information security is not managed by organization, as discussed by Jones (2007). Now it becomes necessary to secure and maintain confidentiality, accessibility and accuracy of information for public and private sector working environment. Furthermore, security policy standards need to be established for proper maintenance of information in organizations as given by Doherty and Fulford (2005). It becomes necessary for all organizations to adapt the standards for information security policy.

Today's business security measure requires constant supervision and systematic maintenance. Some businesses need design of one or more well-defined security processes (Andersson et al., 2011). Therefore, processes must ensure security measure to continue function effectively. A security process is dedicated for managing information security.

Processes help to facilitate the function of the information security work in an effective manner. Regular review of security work is also important and done by processes. Moreover, processes support requirement for business and goals of information security work. Processes also facilitate the things that either affect each other or interdependent. Processes clearly describe what has to be done and what is being done while clearly communicating with each other. A clearly defined process facilitates when is the time to develop security policy and regulatory documents for an organization. Implemented security measures affect a number of business processes. Designing of security processes includes identification, mapping and processes update of business. The aim of this paper is to identify the security policy document necessary for security purpose as well as involvement of stakeholders in each activity.

Documentation of technical or administrative security measures processes requires scheduling of activity that all support in protection of business information. Designing of these type of security measures processes involves two steps. In first step, identification of process is required for business needs, followed by mapping of existing business processes, as a second step. This designing work of new processes covers the

specific security processes at the operational level. at strategic and tactical levels some general processes are required to govern and manage information security work. Some of the general processes like operational process, risk management processes have been discussed by Andersson et al. (2011) that shows the transition level from the strategic to the operational level.

Andersson et al. (2011), defines information security management system as a control for business security. It is the part of the Management Information System (MIS), while other parts of this management system deal with environmental and quality issues. Integration of ISMS with other forms of governance would make Information security work successful. Environmental and Quality are the National and International standards in support of information security management system. Management must allocate all resources to work and motivate the stakeholders involved in order to get a functional security management system. Every stakeholder involved must also aware that the Information Security Management Systems work is a short term investment with reasonable costs.

**Problem discussion**

According to Hone & Eloff (2002), In case if organizations will not get support by his management then it would be difficult for an organization to implement information security policies in their organizations. Now it becomes necessary for the higher management to understand the importance of security policy requirement in their organization. Peoples are not aware of security awareness training programs. These security awareness programs contain most important elements as listed in the security policy documents for the effective implementation of security policy in an organization.

When an organization is unaware of its most sensitive information, it means security policy of an organization would be at risk. This also implies that the organization does not have exposure towards information security protection and its awareness regarding possible security policy. Such gaps will lead to cyberattacks and breaching of important security issues.

**II. Methodology**

For determine the methods in the development of information security policy, I did my contextual review research in this order. I formulated a table to list the articles by their authors, titles, published years, and abstract of this article. This would give an overall picture of what have to be review. Secondly, I collected all the development phases mentioned in the articles to build an integrated information security policy development lifecycle.

Title	Authors	Year	Abstract
A Model of end-user Computing policy: Context, Process, Content and Compliance	Dennis F. Galletta, Ellen M. Hufnagel	1992	A mail survey was formed to support the contingency theory of End User Computing policy compliance.
Foundations of a Security Policy for use of the National Research and Educational Network	Arthur E. Oldehoeft	1992	The document contains the foundations for a national networks security policy and proposed security policy for NREN use
Privacy Policies and Practices: Inside the Organizational maze	H. Jeff Smith	1993	It is a survey study for analyzing the private policies and practices
Development of security policies	Jon Olnes	1994	This paper help developing a security policy based on a figure method and its countermeasures.
A New model for Information Security Policies	Kenneth R. Lindup	1995	Describe the existing types of security policy and deploy a new enterprise model which contains new treat and need security policy.
Writing InfoSec policies	Charles Cresson Wood, CISA, CISSP	1995	The paper offers guidelines how to write InfoSec policy after explaining the importance of policies
Information system security review methodology	ISSAI 5310	1995	This book describe what is information security, then methods and approaches to develop information system security
A Policy for Sending Secret Information Over Communications Networks	Charles Cresson Wood	1996	Short discussion about policy for secured communication networks
“A Baseline Security Policy for Distribute Healthcare Information Systems”	Dimitris Gritzalis	1997	The paper offers an approach for developing information security policy document for healthcare information systems
Develop Internet security policy for organizations	Sharman Lichtenstein	1997	This work describes a general framework for developing Internet security policy for an organization
“Installing an appropriate information security policy”	Nick Gaunt	1998	This research work focus on information security policy development and implementation in the

			health care environment
Why security policies fail	Control Data	1999	The nature weakness of security policy and the security lifecycle
Development of an inter- net security policy for health care establishments	Christos A. Ilioudis, George I Pangelos	2000	This paper describes an appropriate internet security policy for heal care establishments and provides technical measures that are needed for Implementation
“Strategies for Developing Policies and Requirements for Secure Electronic Commerce Systems”	Annie I. Anton, Julia B. Earp	2000	This paper provides specification strategies for security policy and requirements
META security group information security policy framework	Malcolm E. Palmer, Craig Robinson, Jody Patilla, Edward P. Moser	2000	This document offers a framework based on meta security group information security policy framework
Stakeholders in security policy development	S B. Maynard, AB. Ruighaver, A. Ahmad	2001	The paper identified stakeholders and their roles in information security policy development.
Developing effective in- formation systems security policies	R. Daniel Lee SANS Security Essential	2001	It offers a top-down approach for developing effective information security policies at higher level.
Information Security Policy Framework: Best Practices for Security Policy in the E-Commerce Age	Malcolm E. Palmer, Craig Robinson, Jody C. Patilla&EdwardP. Moser	2001	The META SeS information security policy framework
Security policy roadmap- process for creating security polices	ChaiwKokKee, SANS Institute	2001	A step by step guideline for creating information security policy
The People-Policy Technology Model: Core Elements of the Security Process	Steven Schlarman CISSP	2001	How to understand the PPT model and their relationships
Technical Writing for IT Security Policies in Five easy steps	J. Patrick Lindley, SANS Institute	2001	Five steps for writing IT security polices
Security policy: an individual view	John Harlow	2001	This paper describes the necessity of an information security and how individuals could be drawn up and Implemented
The Basics of an IT Security Policy	Jack G. Albright, SANS Institute	2002	The components of a security policy
The Development of Access Control Policies for Information Security Technology Systems	Peter Ward and Clifton L Smith	2002	The paper explores a approach for security policies for information assessment.
An Information Security Meta-Policy for Emergent Organizations	Richard Baskerville and MikkoSiponen	2002	The paper explains the reason why meta-policy is needed for emergent organizations. A meta-policy is proposed for handling the policy formulation, implementation.
A Preparation Guide to Information Security Policy	David Jarmon, SANSInstitute	2002	The processes before and within creating a security policy
Developing an Enterprise Information Security Policy	Jinx P. Walton	2002	It is a three-year strategic planon information technology in the university of Pittsburgh, to develop information security policy
How to Development Good Security Polices and Tips on Assessment and Enforcement	Kerry D. Mo- Connell; SANS Security Essential	2000-2002	Approaches to develop effective security policy for organizations
Information Security Policy-What do International Information Security Standards say?	Karin Hone & J.H.P. Eloff	2002	This paper reviews the international information security standards as a start point to develop information security policy
Security policy update	Chris Pounder	2002	This paper reviews the recent public policies which will impact on an organizational approach towards the security of its data
Security policies in Global Organizations	Gerald P. Long SANS institute	2002	A guideline to create information security policy for a global organization
What makes an effective Information Security Policy?	Hone & Eloff	2002	The Information Security Policy points out the involvement of management and their commitment for information security policy in organization and describe the role to achieve the mission and objective of an organization
Implementation of Information security policy to reduce risk for organization	Fung, Kwok and Longley	2003	This paper tells that an Information security policy is an important tool for successful implementation of information security policies in organization.
Build and implementing a successful information security policy	DanchoDanchev	2003	The paper highlights the process management strategies for successful implementation of security

			policy
Security policy: What it is and Why	Joel S. Bowden, SANS Institute	2003	A general description about information security policy and its capability
Policy Development for Information security- Computer and Network Security in Higher Education	Mark Bruhn and Rodney Peterson	2003	A general information security policy description and analysis
Information technology security: key to success	Judith Borreson Caruso	2003	A survey research about the policy development in institutions.
Developing an enterprise wide policy structure	Thomas R. Peltier	2004	The paper provides at least 12 tier one policies that every organizations must address
From policy to culture	Rossouw von Solm , Basie von Solms	2004	This paper shows the Integration Process of Policies, Education and Culture
Information Security Policy's Impact on Reporting Security Incidents	Terry L. Wiant	2005	This paper addresses the reporting of computer incidents through effective implementation of information security policy
Aligning the Information Security Policy with the Strategic Information Systems Plan	Neil F. Doherty, Heather Fulford	2005	The paper develops the information security policy under the support of the strategic information systems plan.
Information Security Edition 3.0 (first edition)	UCISA	2005	A book about information security
Security policy for higher educational institutions	Steven M. Helwig, SANS Institute	2000-2005	A guideline for creating security policy for higher educational institutes
Information System Security Policies: A Contextual Perspective	Maria Karyda, Evangelos Kiountouzis, Spyros Kokolakis	2005	This paper proposed a contextual framework of information security policy in four dimensions which affect their success adoption
Six Design Theories for IS Security Policies and Guidelines	Mikko Siponen, Juhani Ilvri	2006	The paper suggests six design theories and outline their guiding principles in the application of IS Security Policies
Computer security policy	Institution of Education University of London	2007	Detailed policy applied in institution of education university of London
Information Security Policy Development and Implementation	Avinash W. Kadam	2007	This paper formulates a development approach for information security policy. It also contains the business impact and other implementing elements of information security policies
Information Security Policy Development and Implementation	Avinash W. Kadam	2007	The paper states an approach for the development of information security policy suitable for the business application.
Analysis of Security policy using Deductive Spread- Sheets	Anu Singh, C.R. Ramakrishnan, I.V. Ramakrishnan, Scott D. Stoller, David S. Warren	2007	This paper proposed a deductive spreadsheets for security policy analysis
Information Security Policy- A Development Guide for Large and Small Companies	Sorcha Canavan and Sorcha Diver SANS Institute	2007	This document gives guidelines on elements in information security policies includes the requirements, the users, types, topics and etc.
Producing your network security policy	Frederick M. Avolio, Steve Fallin	2007	The process to creating a network security policy
Implementation and Effectiveness of Organizational Information Security measures	Janne Merete Hagen, Eirik Albrecht sen, Trondheim Norway and Jan Hovden	2008	This paper is to study and evaluate the implementation of organizational information measures in effective manner.
Improving an Organizational Existing Information Technology Policy to Increase Security	Shane Talbot, Andrew Woodward	2009	The paper give guidelines for improving policy development and approval process.
The Information Security Policy Unpacked: A Critical Study of the Content of University Policies	Neil Francis Doherty, Leonidas Anastasakis, Heather Fulford	2009	A critical study of university policies' content and the result concludes that the wide diversity policies in use is a Short term security management approach
Idea to derive security policies from collaborative business process	Ji Hu	2009	This paper introduces the current research for developing information security policy from formal business process models
Information Security Policy: An Organizational-Level Process Model	Kenneth J. Knapp, R. Franklin Morris,	2009	This paper formulates a Policy model to illustrate in a comprehensive organizational context

	Jr.Thomas E. Marshall		
An Information Security Policy Development Life Cycle	T. Tuyikeze and D. Pottas	2010	The paper illustrates the current methods in security policy development and formulates an information security development life Cycle
Information Systems Security Policies: ASurvey in Portuguese Public Administration	Isabel Marja Lopes, Filipe de Sa-Soares	2010	A development information security policy guideline for public administration based on a survey inPortuguese
Information security management-defining approaches to information security policies in ISMS	Zoran Cosic, MarijaBoban	2010	This paper gives an approach of defining security policies in ISMS
Information security management policy	Professor Geoff Whitty	2010	This document provides an information security policy for university of London
Information security policy- Best practice document	Kenneth Høstland, Per Arne Enstad, ØyvindEilertsen, Gunnar Bøe	2010	The document contains a template of an information security policy
Information Security Maturity Model	Dr Malik Saleh	2011	The Paper Proposed an Information Security Maturity Model to evaluate the ability of organizations to meet Security objectives
Guideline on information security policy	National computer board	2011	The document give detailed guide- lines on information security policy includes purpose, structure, development process and etc.
Information security policies in the UK healthcare sector: a critical evaluation	Bernd Carsten Stahl, Neil F. Doherty & Mark Shaw	2012	This paper tries to analysis information security policy by viewing them through a critical theoretical lens in a case study of UK healthcare service
Identifying linkages be- tween statements in in- formation security policy, procedures and controls	Vinod Pathari&Rajendra Sonar	2012	The paper proposes an approach to analyze the security statements and the linkage between them.
A Policymaking process “Tug-of-war”: National information security policies in comparative perspective	Kenneth Rogerson, Daniel Milten	2013	The situation of the “tug of war” in the policies cause the incremental policy change an implementation
A Framework for Leading the Transformation to Performance Excellence Part	Latham	2013	This work proposed a framework which tells that, policy documents should be developed that fits within the organization culture to ensure that organization information security policy is useful for protection of information assets. All stakeholders have involved in policy development such as senior management and legal, employees, system administrators.
Information security policy development and implementation: a content analysis approach	T. Tuyikeze& S. Flowerday	2014	A literature analysis about the challenges and approaches in information securitymanagement
Development of Information Security Policy	Whitman &Mattord	2014	This work started with the designing and development of policy followed by management processes are created to ensure that the policy would successfully implemented within the organization. The policy development projects should be well planned and funded, well managed and be finished on time and within budget
Policy: Information security policy	Jethro Perkins	2015	It is a policy document released by London School of Economics and Political science
Information Security- Policy, Procedures&Guidelines	State of Oklahoma	2015	The Document presents the Policy, Procedures, Guidelines for Information security and protections of Information assets

### III. Research Analysis

All research articles are categorized by its publication source as in figure-1. The main theme of all the research articles includes functions, development methods, lifecycle and scope of ISP (Information Security Policy) document. Research analysis based on literature review is accomplished in order to study the relevant issues about development and implementation of security policy in organizations.

**Figure 1: Publishers of the Articles**

Literature publishers	Numbers of articles
A publication of EDUCAUSE	1
Business Computing	1
Computer & Security	11
Emerald Insight	1
IEEE	2
Information & Management	1
Information Management & Computer Security	5
Information Security Conference	6
Information Security Policy	1
Information System Security	2
Information Systems Journal	1
International Journal of Information Management	2
International Journal of Medical Informatics	1
Journal of Information Technology & Politics	2
Journal of the Association for Information Systems	1
Logistics information management	2
Medical informatics and the internet in medicine	1
National Computer Board	1
None resources	19
Organizational document	24
Security management practices	1
The office of management and enterprise service information Services	1
Total articles	87

There is a content analyze about information security policy functions. All the sentences, descriptions or paragraphs about information security policy’s purposes or definitions were gathered. I put the similar views together with their authors and year. It assisted in the generalization of consensus from different researchers.

#### IV. Conclusion

This research article has discussed the strategy for development a method for Information security policy document and practices followed by organization management. The systematic literature review and its analysis has provided a clear understanding of the development process of security policy in a comprehensive manner. Based on the review, we have discussed security policy model that should be implement in an organization. The information security policy and its associated practices has several implications for researchers. The expert reviews will be helpful for the development of security policy framework for validation purpose.

#### References

- [1]. Abrams, M., & Bailey, D. (n.d.). *Abstraction and Refinement of Layered Security Policy*.
- [2]. Albright, J. G. (2000). *The Basics of an IT Security Policy*. SANS Institutes. Anderson, R. (1996). *A Security Policy Model for Clinical Information Systems*. In Proceedings of the IEEE Symposium on Security and Privacy, 30–43.
- [3]. Antón, A. I., & Earp, J. B. (2000). *Strategies for developing policies and requirements for secure electronic commerce systems*. E-Commerce Security and Privacy, 2, 29–46.
- [4]. Avolio, F. M., Consulting, a., Fallin, S., & Pinzon, D. S. (2007). *Producing Your Network Security Policy*. Watchguard. Com. July, (July), 1–13.
- [5]. Banks, S. (1990). *Security Policy*. Computer & Security, 9, 605–610.
- [6]. Baskerville, R., & Siponen, M. (2002). *An information security meta-policy for emergent organizations*. Logistics Information Management, 15(5/6), 337–346.
- [7]. Bhattacharjee, A. (2012). *Social Science Research: principles, methods, and practices*. Textbooks collection (Vol. 9).
- [8]. Bowden, J. S. (n.d.). *InfoSec Reading Room Security Policy: What it is and Why - The Basics*. Information Security.
- [9]. Cardiff and Vale University Health Board. (2015). *Information Technology Security Policy, 2003(23)*.
- [10]. Chang, S. E., & Ho, C. B. (2006). *Organizational factors to the effectiveness of implementing information security management*. Industrial Management & Data Systems, 106(3), 345–361.
- [11]. Clark, D. D., & Wilson, D. R. (1987). *A Comparison of Commercial and Military Computer Security Policies*. Nist Special Publication Sp.
- [12]. Classification Security & Secretary, T. A. (2013). *Information security management policy*, (June 2010), 1–12.
- [13]. Control Data. (1999). *White Paper: Why Security Policies Fail*.
- [14]. Corpuz, M. (2011). *Enterprise information security policy assessment: an extended framework for metrics development utilizing the goal-question-metric approach*. Proceedings of the 15th World Multi-Conference on Systemics, Cybernetics and Informatics.
- [15]. Corpuz, M. (2011). *The enterprise information security policy as a strategic business policy within the corporate strategic plan*. Proceedings of the 15th World Multi-Conference, 275–279.
- [16]. Corpuz, M. S. (n.d.). *Limitations of the Information Security Management System Assessment Approaches in the Context of Information Security Policy Assessment*.
- [17]. Cosic, Z., & Boban, M. (2010). *Information security management - Defining approaches to information security policies in ISMS*. SIISY 2010 - 8th IEEE International Symposium on Intelligent Systems and Informatics, 83–85.

- [18]. Danchev, B. D. (n.d.). *Building and Implementing a Successful Information Security Policy*. WindowsSecurit.com.
- [19]. Darke, P., Shanks, G., & Broadbent, M. (1998). *Successfully completing case study research: Combining rigour, relevance and pragmatism*. Information Systems Journal, 8(4), 273–289.
- [20]. Doherty, N. F., & Fulford, H. (2006). *Aligning the information security policy with the strategic information systems plan*. Computers & Security, 25(1), 55–63.
- [21]. Doherty, N. F., Anastasakis, L., & Fulford, H. (2009). *The information security policy unpacked: A critical study of the content of university policies*. International Journal of Information Management, 29(6), 449–457.
- [22]. Eloff, J. H. P. (1988). *Computer Security Policy: Important Issues*. Computer & Security, 7, 559–562.
- [23]. Enhancing Cyber Security in Mauritius. (2011). *Guideline on Information Security Policy*, (4).
- [24]. Finance, S. (2011). *Information Security Policy, Procedures, Guidelines*. State of Oklahoma, (August), 1–5.
- [25]. Galletta, D. F., & Huffnagel, E. M. (1992). *A Model of End-User Computing Policy - Context, Process, Content and Compliance*. Information & Management, 22(1), 1–18.
- [26]. Gaunt, N. (1998). *Installing an appropriate IS security policy*. International Journal of Medical Informatics, 49(1), 131–134.
- [27]. Gohuen, J. A. and Meseguer, J. (1982). *Security Policies and Security Models*.
- [28]. Gritzalis, D. (1997). *A baseline security policy for distributed healthcare information systems*. Computers & Security, 16(8), 709–719.
- [29]. Grobler, T., & Von Solms, S. (2004). *Assessing the Policy Dimension*. Policy, Vol.64(1), 99–110.
- [30]. Hagen, J. M., Albrechtsen, E., &Hovden, J. (2008). *Implementation and effectiveness of organizational information security measures*. Information Management & Computer Security, 16(4),377–397.
- [31]. Harlow, J. (2010). *Security Policy- an individual view*, 4(3), 87–113.
- [32]. Harrison, W. L., & Dick, M. E. E. (1987). *An investigation of microcomputer policies in large organizations*. Information and Management, 12(5), 223–233.
- [33]. Helwig, S. M. (2000). *Security Policy for Higher Educational Institutes*. SANS Institute.
- [34]. Höne, K., & Eloff, J. H.. (2002). *What Makes an Effective Information Security Policy?* Network Security, 2002(6), 14–16.
- [35]. Höne, K., & Eloff, J. H. P. (2002). *Information security policy — what do international information security standards say?* Computers & Security, 21(5), 402–409.
- [36]. Hong, K.-S., Chi, Y.-P., Chao, L. R., & Tang, J.-H. (2003). *An integrated system theory of information security management*. Information Management & Computer Security, 11(5), 243–248.
- [37]. Hostland, K. (2010). *Information Security Policy*. Uninet Led Working Group on Security, (October), 6–27.
- [38]. Howard, P. D. (2002). *THE SECURITY POLICY LIFE CYCLE: FUNCTIONS ANDRESPONSIBILITIES*.
- [39]. Hu, J. (2009). *Idea to derive security policies from collaborative business processes*. Proceedings - IEEE International Enterprise Distributed Object Computing Workshop, EDOC, 243–246.
- [40]. Ilioudis, C., &Pangalos, G. (2000). *Development of an Internet Security Policy for health care establishments*. Med Inform Internet Med, 25(4), 265–73.
- [41]. Institute of Education University of London. (2007). *Computer Security Policy*.
- [42]. IOE Information Security Policy: Effective: 1 July 2007 ISSAI. (1995). *Information System Security Review Methodology*, 91.
- [43]. Jarmon, D. (2002). *A Preparation Guide to Information Security Policies*. SANSInstitute.
- [44]. Kadam, A. W. (2007). *Information Security Policy Development andImplementation*.Information Systems Security, 16(5), 246–256.
- [45]. Karyda, M., Kiountouzis, E., &Kokolakis, S. (2005). *Information systems security policies: a contextual perspective*. Computers & Security, 24(3), 246–260.
- [46]. Kee,C.K.(2001). *Security Policy Roadmap-Process for Creating Security Policies*.SANS Institute.
- [47]. Klaic, A., &Hadjina, N. (2011). *Methods and Tools for the Development of Information Security Policy – A Comparative Literature Review*. Mipro, 1532– 1537.
- [48]. Klaiü, A. (2010). *Overview of the State and Trends in the Contemporary Information Security Policy and Information Security Management Methodologies*, 1203– 1208.
- [49]. Knapp, K. J., Franklin Morris, R., Marshall, T. E., & Byrd, T. A. (2009). *Information security policy: An organizational-level process model*. Computers & Security, 28(7),493–508.
- [50]. Lee, R. D. (2004). *Developing Effective Information Systems Security Policies*. SANS Institute.
- [51]. Lichtenstein, S. (1997). *Developing Internet Security Policy for Organizations*. IEEE.1060-3425/ 97
- [52]. Lindly, J. P. (2001). *Technical Writing for IT Security Policies in Five Easy Steps*.SANS Institute.
- [53]. Lindup, K. R. (1995). *A new model for information security policies*. Computers & Security, 14(8), 691–695.
- [54]. Long, G. P. (2002). *Security Policies in a Global Organization*. SANS Institute. Lopes, I. M. (2010). *Information Systems Security Policies:A Survey in PortuguesePublic Administration*. IADIS International Conference Information Systems,61–69.
- [55]. Luker, M., & Petersen, R. (2003). *Policy Development for Information Security*. Computer and Network Security in Higher Education Information Security. A Publication of EDUCAUSE.
- [56]. Maynard, S. B., &Ruighaver, A. B. (2002). *Evaluating IS Security Policy Development*. Security, 183–189.
- [57]. Maynard, S. B., Ruighaver, A. B., & Ahmad, A. (2011). *Stakeholders in Security Policy Development*. 9th Australian Information Security Management Conference.
- [58]. McConnell, K. D. (2011). *How to Develop Goof Security Policies and Tops on Assessment and Enforcement*, SANS Security Essentials, GSEC Practical Assignment, Version 1.3.
- [59]. Myers, M. D., & Newman, M. (2007). *The qualitative interview in IS research: Examining the craft*. Information and Organization, 17(1), 2–26.
- [60]. Oldehoeft, A. E. (1992). *Foundations of a Security Policy for Use of the. National Research and Educational Network*, (February), 1–64.
- [61]. Olnes, J. (1994). *Development of security policies*. Computers & Security, 13(8), 628–636.
- [62]. Palmer, M. E., Robinson, C., Patilla, J., & Moser, E. P. (2000). *META Security Group Information Security Policy Framework*. META Security Group.
- [63]. Palmer, M. E., Robinson, G., Patilla, C. & Moser, E. P. (2001) *Information Security Policy Framework: Best Practices for Security Policy in the E-commerce Age*. Information Systems Security.
- [64]. Pathari, V., & Sonar, R. (2012). *Identifying linkages between statements in information security policy, procedures and controls*. Information Management & Computer Security, 20(4).
- [65]. Peltier, T. (2004). *Developing an Enterprise wide Policy Structure*. Information System Security, 31(8), 15–24.

- [66]. Perkins, J. (2008). *Policy-Information Security Policy*. Proceedings of the 4th Annual Workshop on Cyber, (July), 1–3.
- [67]. Pounder, C. (2002). *Security policy update*. Computers and Security, 21(7), 620–623.
- [68]. Rees, J. Bandyopadhyay, S. & Spafford, E. H. (2015). *PFIRES: A Policy Framework for Information Security*.
- [69]. Rogerson, K., & Milton, D. (2013). *A Policymaking Process “Tug-of-War”*: National Information Security Policies in Comparative Perspective. Journal of Information Technology & Politics, 10(February), 462–476.
- [70]. RSA Security Inc. (n.d.). *A Guide to Security Policy: A Primer for Developing an Effective Policy*.
- [71]. Schlarman, S. (2001). *The People, Policy, Technology (PPT) Model: Core Elements of the Security Process*. Information Systems Security, 10(5), 36.
- [72]. Singh, A., Ramakrishnan, C. R., Ramakrishnan, I. V., Stoller, S. D., & Warren, D.S. (2007). *Security policy analysis using deductive spreadsheets*. Proceedings of the 2007 ACM Workshop on Formal Methods in Security Engineering - FMSE '07, 42–50.
- [73]. Siponen, M. & Iivari, J. (2006). *Six Design Theories for IS Security*. Journal of the Association for Information System, 7(7), 445–472.
- [74]. Siponen, M., & Willison, R. (2009). *Information security management standards: Problems and solutions*. Information & Management, 46(5), 267–270.
- [75]. Smith, H. J. (1993). *PRIVACY POLICIES AND PRACTICES INSIDE THE ORGANIZATIONAL*. Business Computing, 36(12).
- [76]. Solms, R. Von. (1999). *Information security management: why standards are important*. Information Management & Computer Security, 7(1), 50–58.
- [77]. Stahl, B. C., Doherty, N. F., & Shaw, M. (2012). *Information security policies in the UK healthcare sector: A critical evaluation*. Information Systems Journal, 22(1), 77–94.
- [78]. Talbot, S., & Woodward, A. (2009). *Improving an organizations existing information technology policy to increase security*. Proceedings of the 7th Australian Information Security Management Conference, 120–128.
- [79]. Tuyikeze, T., & Pottas, D. (2010). *An Information Security Policy Development Life Cycle*. South African Information Security Multi-Conference, (Saismc), 165–176.
- [80]. Univeristy of Colleges Information Systems Association. (2015). *Information Security Edition 3.0*.
- [81]. Unterkalmsteiner, M., Gorschek, T., Islam, a. K. M. M., Permadi, R. B., & Feldt, R. (2012). *Evaluation and Measurement of Software Process Improvement—A Systematic Literature Review*. IEEE Transactions on Software Engineering, 38(2), 398–424.
- [82]. Von Solms, B., & Von Solms, R. (2004). *The 10 deadly sins of information security management*. Computers and Security, 23(5), 371–376.
- [83]. Von Solms, R., Thomson, K. L., & Maninjwa, P. M. (2011). *Information security governance control through comprehensive policy architectures*. 2011 Information Security for South Africa - Proceedings of the ISSA 2011 Conference.
- [84]. Ward, P., & Smith, C. L. (2002). *The Development of Access Control Policies for Information Technology Systems*. Computer & Security, Vol 21. No 4, pp356- 371.
- [85]. Watson, J. P. (2002). *Developing an Enterprise Information Security Policy*. 153–156. Webster, J. and Watson, R. (2002). *ANALYZING THE PAST TO PREPARE FORTHE FUTURE: WRITING A LITERATURE REVIEW*. MIS Quarterly Vol. 26 No. 2, 42–49.
- [86]. Wiant, T. L. (2005). *Information security policy's impact on reporting security incidents*. Computers & Security, 24(6), 448–459.
- [87]. Wood, C. C. (1995). *Writing InfoSec policies*. Computers & Security, 14(8), 667–674. Wood, C. C. (1996). *A policy for sending secret information over communication networks*. Information Management & Computer Security, 4(3), 18–19.