International Journal of Computer Science and Network (IJCSN)
Volume 1, Issue 3, June 2012 www.ijcsn.org ISSN 2277-5420

A Development of an ISG Framework for Mosul's Health Sector

[1] Mohammad Salim, [2] Marini Othman, [3] Maha M.Ablahd

[1] Department of Information System,
Universiti Tenaga Nasional,
Kajang, Selangor, Malaysia

[2] Department of Information System,
Universiti Tenaga Nasional,
Kajang, Selangor, Malaysia

[3] Department of Information System,
Universiti Tenaga Nasional,
Kajang, Selangor, Malaysia

Abstract

The world has started to appreciate more and more the value of information and its impact on the community. This paper shares the findings of a study done on information security implementation at Mosul's health sector. The study was conducted via a self-administrated questionnaire and interview. The respondents are the IT managers and personnel with functions related to IT in selected hospitals in the city of Mosul. The findings reveal an ISG status that is in dire need for improvement to maintain suitable level of security of information which can be achieved through having good governance practices in place. However there are various degrees of implementation by the hospitals. It is recommended that these findings be used as basis for developing a secure information-based system for the respective hospitals.

Keywords: *Data Security, IT Governance, Security Governance, Information Audit, ISG Framework, Health.*

1. Introduction

Mosul is the second largest city of Iraq and it is located north of Iraq and it is the capital state of Ninawa Governorate almost 400 kilo meters away from Baghdad, Mosul has 9 public hospitals. It is important to mention that health sector in Mosul is directed and controlled by Nineveh Health Directorate which is related to Iraqi ministry of health. Nineveh Health Directorate is a controlling and decision maker of health and sanitation of the Mosul city.

Mosul has a population of 1.8 million. This means that there is an equally huge number of information that has been gathered for the patients that receives care from the health sector. As such, it is very important to ensure secure information for the Mosul health sectors (hospitals, health center, and health directorate) through having good governance practice in place.

The purpose of this paper is to present the summarization of findings of the survey conducted at Mosul hospitals and their readiness to embrace on serious IT security and governance undertaking , an ISG framework developed land in the findings is also presented.

This paper is presented in the following format. In the immediate section a discussion on the survey done by this study. This is followed by the summary for both survey and questionnaire findings of the study. Following that an ISG framework which developed by this study. The paper ends with a conclusion.

2. Survey and Findings

A self-administered questionnaire accompanied with face to face interview were conducted for the purpose of collecting the required data to gain further understanding of the ISG situation of the health sector of Mosul. The

questionnaire and interview covered 7 out of the total 9 public hospitals in the city of Mosul in addition to the Nineveh Health Directorate. There are 8 respondents from 7 selected hospitals and 2 respondents from Nineveh Health Directorate. All of the 10 respondents have positions such as IT manager or personnel with function related to IT. The table below presents the profile of the respondents. The development of questionnaire was based on two articles on the IT security governance subject [1] and [2].

Table 1: Profile of Respondents

Respondent	*Title*	*Hospital/ Organization*
1	Administrator	Mosul General Hospital
2	Computer Engineer	Ibn Alatheer Hospital
3	Data Entry	Al Batool Hospital
4	Data Entry	Ibn seena Hospital
5	Internet Unit Supervisor	Mosul Health Directorate
6	IT Specialist	Al-Salam Teaching Hospital
7	IT Trainer	Al Khansaa Teaching Hospital
8	Senior Programmer	Al Jamhuri Hospital
9	Programmer Assistant	Mosul Health Diroctrate
10	Technical Expert	Al Khansaa Teaching Hospital

The interview aims to discover the profile of responding organizations while survey aims to identify the methods that are currently used in ensuring security of IS, and to determine the components that need to be secured and protected in an information system. In addition, to recognize the possible challenges in implementation of security measures in Mosul health sector, Governance Model used, level of compliance to the standard chosen, issues and motivation for secure information system, types of activities dependent on IT/Information infrastructure.

3. Findings

During the analysis phase, processing data is the main process which involves making the data ready for analysis. This is done by taking the completed questionnaires and putting them into statistical package to make them can be summarized and interpreted. Once the data has been entered into the statistical package for data analysis, then the average analyses is performed. After analyzing of the survey results is done, the researcher makes sure that the posed research questions are answered to draw conclusions. To ensure useful findings which exactly reflect the perspectives of the respondents, the research paid a big attention for analyzing the results since it is considered as one of the most crucial steps during the data analysis phase.

The summary of survey findings are presented as follows:

Table 2: Questionnaire key findings

Survey findings
No information security policies were found at most Mosul hospitals
No information security officer or any person appointed to be in charge of developing security programs in Mosul hospitals
There is no health information systems were found at majority of Mosul hospitals
No BCP was found at most of Mosul hospitals
There is a lack of information security practises and procedures at Mosul health sector
Although most of IT personnel at Mosul health sector believe that information security is important, but there is a lack of information security awareness program or information security training

Table 3: Interview key findings

Findings	*Implication*
• Lack for computer servers	Difficulties in disaster recovery, and maintaining security
• Unreliable security software	Using free personal ant viruses may not provide high level protection
• Lack of IT staff	Difficulties in the implementation of an information security governance

The findings conclude the followings:

The IT Governance Institute or ITGI (2007) outlined the objective of information security as, “to protect the

interest of all parties relying on information and systems from the harm resulting from failure of availability, confidentiality and integrity of the information". [3]

A survey conducted on the ISG implementation and situation for Mosul health sector has revealed that, even though many of Mosul hospitals are aware of the importance of ISG as an integral factor which is vital the success of IT and corporate governance, most of them do not have any written information security policy statements. Furthermore, information security roles and responsibilities are not clearly defined and communicated. Regarding the IT staff, there is a general lack of IT staff resource at Mosul hospitals which is considered as cause of some difficulties in the implementation of ISG. As well as, there is a lack of information security awareness program or information security training.

The basic IT infrastructure and computer applications are available in most hospitals, and there is a need to get cooperation from top Management in order to implement governance over information security.

Based on the findings, it is imperative that measures are taken to improve the quality of ISG to ensure the security of its data and information. Following that, this article presents the ISG framework proposed for the Mosul health sector, the formulation of this framework was basically depended on the summarization of the questionnaire and interview findings, evaluation of the findings.4. ISG Framework

4.1 ISG Framework

After reviewing the results and findings from this study, along with previous studies, experiences and observations, a framework is formulated. The formulation of the framework is done after many times of careful revision. This framework describes governance structure, existing ISG gaps, security maturity level, and transformation plan that can help top management of the hospitals and health sector to protect and secure the organizational resources constructively. The development has also relied on the recommendations made by ITGI which concerns governance measurement and maturity issues [4] [5] [6]. It is a generic framework for ISG implementation that could be applied to any hospital of Mosul health sector.

The following underlying basis will be used to formulate the framework: literature review, findings from survey, and findings from interview. The following figure 2 illustrates the bases that formulated the framework.

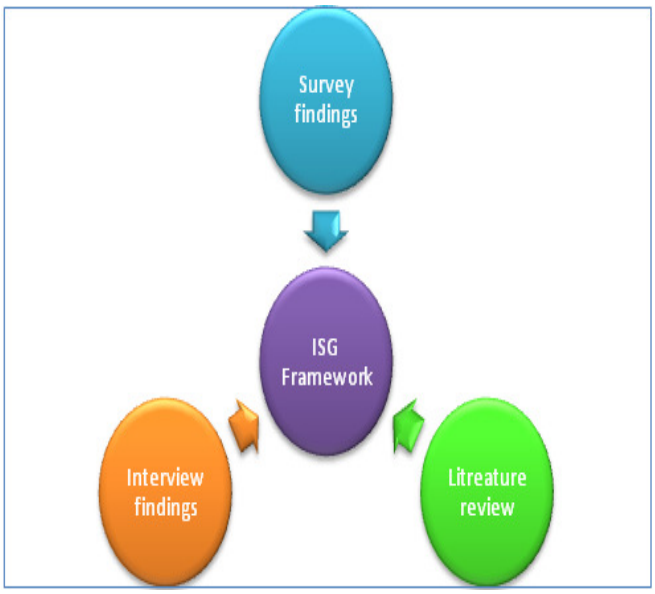
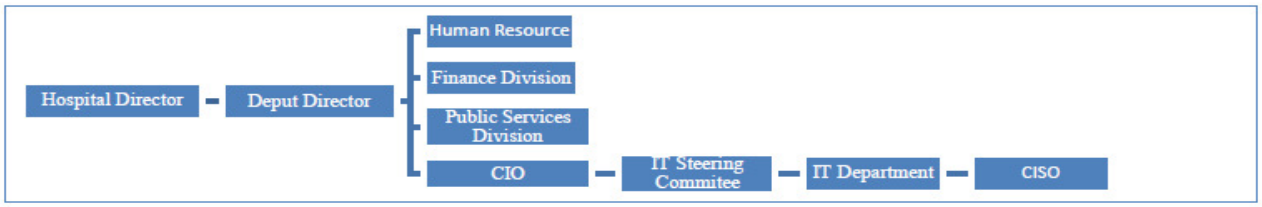


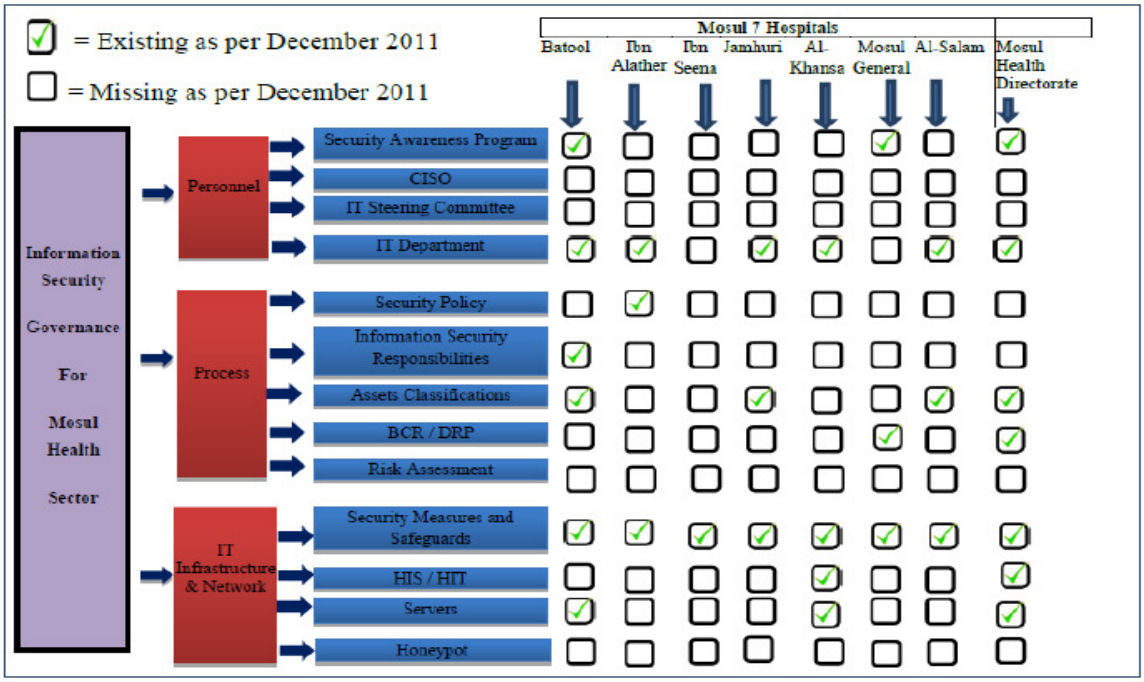
Fig 1 Bases that set the foundation for development of the framework.

4.2 Framework Brief Description

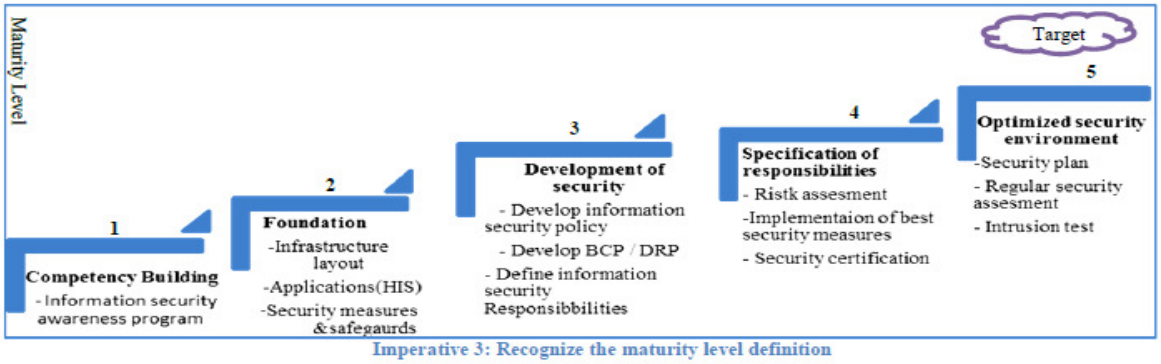
Figure 2 depicts the proposed ISG framework. The researcher has divided the framework into four parts with the purpose of making it more comprehensive and to cover all the aspects on how to govern the security of Mosul health sector.



Imperative 1: Adopt the recommended governance structure



Imperative 2: Trade on the ISG gaps for each hospital



Imperative 3: Recognize the maturity level definition

Impeative4: Use the transformation timeline to attain improved maturity level

Fig 2 ISG Framework for Mosul Health Sector.

The following is a short description for each part of the framework:

Organizational Structure

The first part proposed an organisational structure that enables the governing of information security. This organisational structure is specific for Mosul health sector, since there are no boards of directors at the hospitals of Mosul; however there is only a hospital director as a top management in the hospitals.

Gaps

The second part illustrated the ISG gaps for each one of the seven hospitals in addition to Mosul health directorate. The indication process of these gaps was based on the research survey and interview.

Security Maturity Level

The third part is defining the security maturity level for Mosul health sector. To enable the framework to act as a roadmap that hospitals can follow in order to start with implementation of information security governance or to move from a specific level "As-is" to the targeted level "To-be".

Transformation Plan

The fourth part is a proposed transformation plan for implementation of information security governance throughout Mosul health sector. The current level, target level, and the timeline of this plan, all of them were indicated by the researcher through the results and findings of the research which are based on the collected data via survey and interview.

5. Conclusion

It is common for people to look for information security solution as existing in not more than a software package. Despite that belief, information security is a process which engages and utilizes aspects which includes people, process and technology in order to assure the integrity, confidentiality and availability of information asset. It is not an easy mission to assure proper implementation of ISG in any of the hospitals.

It is crucial for the management of Mosul hospitals to be aware of the importance of information as one of the main assets that they need for making decisions and improving the total performance of the hospitals employees. Hence, the management support and commitment in guarantying proper ISG is an imperative issue.

At last, the researcher has been brought to a conclusion that both the survey findings and the proposed framework of this study would be able to aid many of Mosul hospitals in addition to the Nineveh Health Directorate on the way to develop and establish IT security through implementing of benchmarking, and also to supplement to the literature on benchmarking framework for other hospitals.

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First Author Mohammad is active member of ISACA and he received his Bachelors degree in Computer Science from Al-Hadba University College in 2007. After graduation, he started with working as an IT manager at Al-Rabiein Development Center (RDC) at June 2007 until he left his job at October 2008, later he started working as an Executive director for Al-Tadhamun Development Center (TDC) at September 2008 until December 2009 when he decided to quit his job and to further his academic study at Malaysia. He is currently working towards his Master's degree in Information Technology. His research interests include IT governance, information security governance, and IT government.

Second Author B.Sc.Computer Science, Indiana State University, USA, M.Sc. Computer Science, Western Kentucky University, USA, Ph.D. Industrial Computing, Universiti Kebangsaan Malaysia .Her current position is Senior Lecturer / Head of Department in Uniten University.

Third Author B.Sc. Computer Science, Al-Hadba University College, Iraq. She is currently working towards her Master's degree in Information Technology. Maha worked as a full-time lecturer in University of Nawroz in Iraq for 1 year. She taught various subjects in the computer science such as image processing, and computer architecture.