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Review the implementation of information security management system requirements in hospitals of Tabriz in East Azarbaijan

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ABSTRACT

Objective: The purpose of this study was to investigate and analyze the assumptions and requirements for the implementation of Information Security Management System (ISMS). **Methodology:** To check assumptions security management system implementation is the population of Tabriz hospitals. Review the requirements and assumptions are based on the standard ISO / IEC 27001, ISO / IEC 27002 test target setting and ISO 27001 standard questionnaire containing 33 questions in 11 control is used. The data were analyzed using descriptive and inferential statistical method that factors in the implementation of information security management system was confirmed. As well as to identify factors contributing to the implementation of information security management system and factor analysis, structural equation model was used PLS smart software that based on its findings to impact and indirect aspects of implementation effectiveness of the system. **Results:** Using the software, smart-PLS and using structural equation modeling confirmatory factor analysis was performed to measure the test of convergent validity, divergent validity, reliability Security and reliability of observable variables and quality test and measurement model of the 101 comments experts, all the prerequisites and requirements, including information security policy, the organization of information security, asset management, human resources in terms of security, physical and environmental security, communications and operations management, access control, use, development and maintenance, incident management information security, business continuity management and compliance with laws in secure level at %99 is forecast in Tabriz hospitals are effective information security management system. **Conclusion:** According to prioritize the factors affecting information security management system, operating (after) the most monitors and agents (after) the supply and implementation of information security management system least affected are in Tabriz hospitals.

1. Introduction

Information is the main source for the implementation of Information Security Management. Information is data processing in fact shortest definition. Data is the raw materials potentially that to identify , to understand ,to significant data in order, translation goods, events existence of the degree of reality or in the fantom world can be found, through research methods, cognitive tools machine language, emotions five, mind and brain and gain experience. In idea philosophic information has conceptus polymorphic and polyscmantic or document in broadcast system that to known clear information or knowledge of organization or hidden knowledge , information ,business science active in humen and system but not transmutation obvious, document or set therefore use different tools information technology is necessary for collection these information and self-tools will cause synergies information and science and business also basic requirements will obvious for management security information (Dehghan-Nayei and Aghajani, 2010; Kuzu et al., 2006).
Hospitals are important center to generation data of hygeian , medicament .sepas design, electronic conect hospitals ,his systems establish were need to

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information security standard as the foundation for the establishment of IT exploitation of great importance in the region.

Health care organizations are manufacturers of health data in the context of information systems. Tasks system information are preserve nature of the data in a secure environment in order to provide appropriate and quality services to patients. Given the importance of health data and the need to secure them many national and international organizations to develop standards such as: ISO27000, NAIC, AAMC CPRI, ASTM and HIPPA tried (Moghaddasi and Ayani, 2013).

Note that an information security management system preserve information resources persistency to prtection the confidentiality, integrity and availability of information organization. These three concepts associated security information tariff patient we have the following (karami, 2013):

- Privacy: a process that ensures that information is accessible only to authorized persons. Confidentiality is achieved through encryption access control techniques.
- Correctness and accuracy: ensures that information is accurate and illegal methods to alter the data when receiving exactly the same as when you write. These features influence the patient's safety.
- Availability of information: the possibility to use on-demand information and availability of an organization or individual is allowed. This feature has important to efection care. The overall goal of this study is analysis requirements of the implementation of Information Security Management System hospitals in Tabriz .For this purpose assumptions and requirements for information security system based on the COBIT model, which includes the criteria of organizing planning, acquisition and implementation, delivery and support, monitoring and assessment is based on the standard ISO 27001 and ISO 27002 control in 11 areas studied that include:

1. Existential security policy
2. Organizational information security
3. Asset Management
4. Human resources security
5. Physical and environmental security
6. Operations Management and communication
7. Control access to information.
8. The development and maintenance of systems
9. Managing incidents related to information security
10. Business continuity management
11. Accordance with the rules

1.1 The main objectives:

The purpose of this study was to investigate and analyze the assumptions requirements of implementation Information Security Management System of Tabriz hospitals. For this purpose the requirements of information security management system based on the COBIT model, which includes organizing projection criteria, providing implementation, support and supervision are analyzed Survey placed (Leino-Kilpi and Kuttu, 1995).

1.2 The importance and necessity of research:

Information is one of the most valuable and sensitive assets of the organization. Thus vital is to delivering timely and appropriate information. Requisite for business continuity, institution economic is protection and maintenance of information (Merakou, 2001).

Illegal access is difficult to illegal use, gap for information of the desk, computer, unauthorized use of computers has become a problem and the access by employees users internet or by other factors of organization therefore organizations and companies are looking to implement security cases. For security implementation is not only due to technical issues. rather control policy also created the proper procedures, enhance the percentage of information security ,it is caused to utilization information security management systems .present topics related information security is dimenstion newer , is attractive for all organizations and institution (Zulfikar and Ulsoy, 2001). Despite countries use types of information security management systems standards unfortunately yet not effort to adaptation, implementation in offices, organizations of Iran. these days regional and international political and economic conditions it is essential extensive research for obtain universal informations and to losing opportunities is caused to implementation slowly information systems not paid or inappropriate approach is huge barrier to advance to usage technology information ,communication base knowledge society that fortunately will formations, this definitely is gradually emerging (Kazemi, 2014; Mallik, 1997).

Hospitals due to specific types of clients, sharing and transmission of information are of particular importance. This special groups according have specific type of database. In this study, Review the implementation of information security management system requirements in hospitals of Tabriz in east azarbaijan.

2. Materials and methods

2.1 Analytical model

2.1.1 Methodology

Due to the nature of the present study is cross sectional is descriptive study (survey type).data collection, research type survey. Considering the results of the research can be used in hospitals subjected to testing theoretical concepts will be discussed objectively it can also be applied.

2.2 Data were collected

Every phenomenon in terms of quantitative and qualitative features that awareness of these features is dependent on the nature and how to achieve them. The aim of the research such as descriptive or explanatory, to access information about the changes. The main ways to collect data include the following: the use of information and evidence, observation, interviews and questionnaires (Araby and Nabiallah Dehgan, 2011).

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3. Discussion and results

3.1 questionnaire

The purpose of the questionnaire give information about the specified group or community being studied. One of the important reasons for the use of a questionnaire which provides the possibility of studying large samples. Quality questionnaire and applicable in obtaining correct information is very important (Araby and Nabiallah Dehgan, 2011; Woogara, 2005).

In this study, both primary and secondary data have started to collect data, secondary data collects through library studies, reference books and publications, organization and use of the documents have been obtained from the Internet. Preliminary data, obtained through field studies and questionnaires.

Questionnaire consisted of a cover letter to explain the purpose of the study and invited to participate specialized research plus two general questions follows: first the general questions reflect the demographic characteristics of respondents such as education, sex, age, positions and years of service. The second category specific questions in order have been set to examine the requirements. In specific questions check prerequisites and requirements for the implementation of Information Security Management System standard has been developed includes 33 items.

3.2 Validity

The concept of validity or accreditation answer to the question that gauges the extent to attribute to measure. No knowledge of data validity cannot be measured accurately.

Types validity include content validity, critertion validity and construct validity. In the narrative structures relevant to the content is a credit to check the ingredients depend on it. If the question of the questionnaire special attributes and skills that they have measured the researchers plan to test the validity of the content. To ensure content validity, must act in situations of the tool so that the question is done of the constituent instruments of the selected content. The validity were used two fermans CVR and CVI in the study.

A) Index the content validity ratio (CVR): This indicator is designed by Lavshh ().each of the questions asked on the basis of the whole are classified two-part Likert "is it beneficial" and "not beneficial". Then, based on the following formula, the content validity ratio is calculated:

$$CVR = \frac{\text{The number of experts who have chosen benefit option} - \frac{\text{The total number of specialists}}{2}}{\frac{\text{The total number of specialists}}{2}} \quad (1)$$

Based on the number of experts who have evaluated your questions, minimum acceptable CVR should be based on the following table. CVR less than the amount calculated for the questions to be asked regarding the number of expert evaluators, should be excluded from the trial because based on content validity, content validity cannot agree.

Table 1. CV minimum acceptable score based on the number of experts transition

the amount of CVR	The number of specialists	the amount of CVR	The number of specialists	the amount of CVR	The number of specialists
0.37	25	0.59	11	0.99	5
0.33	30	0.56	12	0.99	6
0.31	35	0.54	13	0.99	7
0.29	40	0.51	14	0.75	8
		0.49	15	0.78	9
		0.42	20	0.62	10

According to data CVR table and the number of experts selected for this study, 10 people, CVR should be Tasval top is 0.62, so were all the questions.

B) Content validity index (CVI): To evaluate content validity index is used Waltz and Basel. That include specialists "relevance", "clarity" and "simplicity" of each item on a 4-point Likert their profile. Experts relevance of each item of their choice from 1 "not relevant", 2 "somewhat concerned", 3 "relevant" to 4 "very concerned" classifications. Simple items respectively from 1 "not easy", 2 "relatively simple", 3 "simple" to 4 "of the simple" and clear the items in the order of 1 "not clear", 2 "relatively it is clear ", 3" obvious "to 4" clearly linked "to be determined.

$$CVI = \frac{\text{The number of specialists who have items 3 and 4 score}}{\text{The number of specialists}} \quad (2)$$

The minimum acceptable value for the index equal to 79/0 CVI and CVI If the item is less than 79/0 that the items must be removed.

The minimum acceptable value for the index equal to 0.79 CVI and CVI If the item is less than 0.79 that the items must be removed.

According to the findings of validity indicators concluded CVI, CVR that this study is a content validity. For the validity of structures, used confirmatory factor analyze. Researchers are preparing a model assumes relatively little empirical data based on several parameters, describing explain or justify. This information is pre-experimental model data structure that can be in the form of a theory or hypothesis, a classification scheme is certain of the items in compliance form and content of objective, empirically determined conditions or knowledge gained from previous studies. Verification methods procedures to determine that the data are synchronized or not a given factor structure. Confirmatory factor analysis using PLS software for the structural prerequisites for the implementation of the ISMS

Table 2. Outer Loadings Load Factor

	develope.c	k.access	legaly	m.business	m.daraei	m.event	m.operation	policy	s.human	s. kysical	sazmandehi
bc1_1				0.884160							
bc2_1				0.880386							
bc3_1				0.790180							
ca1_1		0.806628									
ca2_1		0.838499									
ca3_1		0.863215									
dm1_1	0.859943										
dm2_1	0.848968										
dm3_1	0.872959										
l1_1			0.814123								
l2_1			0.896947								
l3_1			0.841914								
ma1_1					0.797406						
ma2_1					0.815671						
ma3_1					0.774589						
mei1_1						0.806971					
mei2_1						0.836870					
mei3_1						0.803993					
moc1_1							0.835606				
moc2_1							0.845851				
moc3_1							0.869376				
os1_1											0.840833
os2_1											0.862303
os3_1											0.787408
p1_1								0.828107			
p2_1								0.843002			
p3_1								0.813663			
sht1_1									0.798717		
sht2_1									0.864975		
sht3_1									0.780566		
sph1_1										0.854389	
sph2_1										0.787176	
sph3_1										0.809724	

As the results in Table outer loading

is specified, all factor loadings are greater than 0.3. So all items have a positive effect on the implementation of information security management systems are desirable so their validity in estimating the factors and requirements in their information security management system implementation.
Reliability or credibility is measurement tool of the technical reliability. This decision deals measurement tool mentioned concept that lives up to what extent the same conditions gives the same results. The reliability coefficient is confedence of zero (no relation) to +1 (a perfect relationship). Reliability coefficient indicates the extent gauges stable characteristics or features variable subjects and his temporary measures. For calculating the reliability of the instrument is used to measure various ways (Bazarghan, 2008).
There are two ways to reliability: Cronbach's alpha and composite reliability (reliability structure)
The study is used to measure the reliability of composite reliability.

Table 3. Reliability research

	Composite Reliability		Composite Reliability
develope.c	0.895524	s.human	0.855165
isms	0.950966	s.physical	0.857969
k.access	0.874720	sazmandehi	0.866674
legaly	0.887780	tamin	0.848010
m.business	0.879789	tarahi	0.903945
m.daraei	0.838401	policy	0.867651
m.event	0.856727	poshtibani	0.904305
m.operation	0.887654	nezarat	0.881047

0.7 indicates high levels of internal consistency is reflective measurement models.
0.6 <CR> 0.7 is sufficient for exploratory research
0.9 <CR> 0.7 for the stage of maturity.
According to the results table CR: Because the amount is more than 0.7, then the reliability of the questionnaire used in the study, is confirmed. In other words, the model has internal consistency.

3.3 Statistic society& example

All individuals and objectives who have at least one common attribute that foundation a .if number of population is restricted to say a limited population. Community in this study, including all managers and information security and IT experts and users of Tabriz hospital information system, which includes 101 individuals

4. Conclusion

Questionnaire validity, content validity using the form CVI, CVR and narratives about the structure and reliability combined with optimum reliability.
Community in this study, including all managers and information security and IT experts and users of Tabriz hospitals information system which may ultimately include 101 personal .Due to the nature of the analytical study of research is survey type, application.
Based on field studies and analysis of questionnaire respondents, 56 persons male, 45 of the respondents were female. 8 persons as well as respondents under 25 years, 48 patients between 25-35 years,32 patients between 35-45 years and 13 older than 45 years. Also, 3 of respondents have phd degrees, 25 M.A, 57 B.A and 16 this A.D.
A Security of Manager project, 4 Director / Head of IT, IT expert 29, an information security management counsular, 66 users hospital information system.
5 respondents less than 5 years, 32 between 5 - 10 years, 13 between 10 - 15 years and 21 for more than 15 years of service with 73 respondents less than 2 years, 23 patients between 2 - 5 years, 5 patients between 5 - 8 years project implementation experience with information security management system. 72 persons respondents low volume projects, 26 medium-size projects, three people who attended the ISMS project was old.
Using the software, smart-PLS and using structural equation modeling confirmatory factor analysis was performed to measure the test of convergent validity, divergent validity, reliability Security and reliability of observable variables and quality test and measurement model of the 101 comments experts, all the prerequisites and requirements, including information security policy, the organization of information security, asset management, human resources in terms of security, physical and environmental security, communications and operations management, access control, use, development and maintenance, incident management information security, business continuity management and compliance with laws in secure level at %99 is forecast in Tabriz hospitals are effective information security management system.
According to prioritize the factors affecting information security management system, operating (after) the most monitors and agents (after) the supply and implementation of information security management system least affected are in Tabriz hospitals.

4.1 Suggestions for Future Research

1. Given that in this study, only 8 were studied inTabriz hospitals. Next, the researchers recommended such a review in both public and private hospitals due to comparing to results of several researches in the field of reliability and confidence in the use of the results achieved.

2. Comparative study of organizations, including hospitals that have attempted to establish information security management system and review results prior to the implementation of the deployment and offer suggestions to improve performance 3. According to the study, structural equation modeling and analysis PLS is used to factors such as other researchers suggested techniques AHP, TOPSIS and other software and structural equation such as LISREL, AMOS ... use.

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