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Studying the Establishment Impact of the Integrated Management System (IMS) on Hospital Performance

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Abstract: The current study purpose is determination of the establishment impact of the Integrated Management System (IMS) on hospital performance in the format of a structural equation to provide the necessary conditions for the hospital managers for making decisions. From the purpose perspective, this study is practical and from the method perspectives is in the survey method research group and is based on causal relationships between the research variables. For assessing the amount of establishment impact of this management system, researcher-made questionnaires were used. The society under study is the staff of Arak Social Security Hospital in Iran country. The results of assessment were analyzed by getting help from LISREL software, using structural equation modeling. The study results showed that management standards existence, totally, has positive impact on hospital performance.
Keywords: IMS, Hospital Performance, Factor Analysis, Structural Equation Model.

INTRODUCTION

Hospitals are the most important service providers in The Health System [1]. Hospitals can improve health in society by taking part in the whole health cycle. The major purpose of the hospitals is providing medical services at the highest level [1, 2]. Meanwhile, employing management efficient principals for managing the hospitals seems much more necessary. In this regard, obeying the criteria of the service providing quality, environmentally friendly activities, and protecting staff health In terms of legal requirements and also beneficiaries' consent, are from the management principals in health organization area and significantly in hospital management [3]. For answering these demands, management standards have been developed. Accordingly, in some health centers besides mandatory health standards, other kinds of standards are used as means for hospital processes improvement [4].

Thus in recent years getting certifications which are related to management standards, have become a routine process for many organizations. Maybe, in the past performing these systems were from honors of organizations, but today it's the requisite for any organization survival.

Today among different management systems which are available, many organizations have implemented the quality management system and also some of them have implemented the overall environmental management system, safety and health management system [5]and it seems that, these management systems have a higher acceptance by organizations.

Nowadays management standards are widely used in many of the country hospitals [6]. Based on available statistics among 69 hospitals related to Health Security Organization, 19 hospitals have succeeded to implement or perform ISO 2004 and 14001 international environmental standards.

In 2006, Arak Emam Khomeini Hospital performed the Integrated Management System, including quality management ISO 9001, environmental management ISO 9001, occupational health and safety management OHSAS18001 and got its certificate. For this reason in this work the impact of the integrated management system on hospital performance has been studied.

In current research, firstly using confirmatory factor analysis (CFA), the validity study and reliability of research variables were studied. Then indexes like Chi-square are used for evaluating measurement and structural model fitting of the final model. Finally, by structural model, causal relationships between the

research latent variables will be studied and research statistical hypotheses will be tested.

Integrated Management Systems (IMS)

One of the recent developed parts of the organization's management portfolio can be considered as the issue related to quality, environmental and health and safety management aspects of Integrated Management Systems (IMS) which has been taken into consideration of both quality and academic researchers [7-9]. It also shows the increasing use of integrated management systems as the main systems for future organizational concepts. According to [9], "Integrated Management System is a single structure used by organizations to manage their processes or activities that transform inputs of resources into a product or service which meet the organization's objectives and equitably satisfy the stakeholders quality, health, safety, environmental, security, ethical or any other identified requirement. In an IMS, all the components of business are joint together coherently in order to achieve the determined purposes at the end of the mission.

A REVIEW OF THE PAST RESEARCHES AND HYPOTHESES OF THE RESEARCH

A review of the past researches

Checking performance results is considered as an important strategic process [10]. Hospitals managers should answer this question, "despite the costs to create, establish, register and keep that, has any meaningful difference in hospital operational indexes happened or no?" [6, 11]. Thus for achieving this purpose and also satisfying clients and staff, assessing related operation to the intended management system is essential.

Despite interest growth for using optional management system, few experimental evidences about these systems impacts in organization operation are observed [11-13]. In this respect in some studies lack of information references for more analysis has been noted. For example, in many countries providing environmental report is not a legal requirement and because of this companies don't have any tendency towards publishing their environmental data numerically. Among done researches, one study from comparative type has assessed the impact of the hospital standards establishment on the hospital indexes in Shahrood. The results have shown positive impact of health promoting hospitals standards implement in Shahrood Fatemieh Hospital, which has leaded to an improvement in some of the operating indexes [1, 14]. Other study results show, quality management system based on ISO9001/2008 has caused a higher average job satisfaction among this center staff compared with other centers [14]. Nowadays with regards to staff health and considering their welfare issues and employing solutions for adapting work situation with physical and mental conditions, is a part of any organization management duties. In this case, fixing the discrepancies of the environmental factors, by implementing safety, occupational health and environmental health, are some of the appropriate solutions for promoting for organizational performance. Accordingly, in a study, organization performance in terms of job harmful factors, chemical factors and air pollutants before and after implanting an occupational health and safety management system and environmental management system were analyzed. The results showed that the performance has had positive change [3].

A study about occupational health and safety system implanted in organizations and its impact on work-related accidents rate was done. The study result showed that implanting health and safety management system in studied companies has reduced the accident rates to 67 percent and the work-related death numbers to 10.33 percent [15].

Hospital activities are associated with producing hazardous and non-hazardous waste (e.g. pharmaceutical waste, infectious waste, toxic waste and radiation) and a huge amount of natural resources is also used [16]. Accordingly, the hospitals performance should be managed in terms of environmental adaptability too. Considering the hospital management efforts for implanting management systems like environmental management, it's expected that the hospital will become better that before in this context. Thus, in this study, hospital performance related with implanting management systems was assessed in Emam Khomeini Hospital in 2013. On the other hand, different references have been used for determining the management systems implant on organizations' performances [12]. LISREL models are among most widely used ones [17-20]. The measuring model or the factor analytical part, determines that how a latent or hypothetical variables are measured in the form of more visible variables. On the other hand, the structural equation part or path analysis studies causal relationships between latent variables. In other words, measuring model answers the questions which are related to validity discussion and reliability of observed variables and structural equation model answers the questions which are related to strength or intensity of the relationships (directly or indirectly and totally) between latent variables and the amount of determined variance in the entire model.

Model Hypothesis

In this research after checking theoretical principals and recognizing components and indexes which are related to the research subject, the conceptual research model has been showed in Fig 1. for determining the studied variables place in the proposed model. Due to propose model, integrated management

variable with the dimensions of (quality management, environmental management, occupational health and safety management) is considered as an independent variable and (hospital performance) variable is considered as dependent variable.

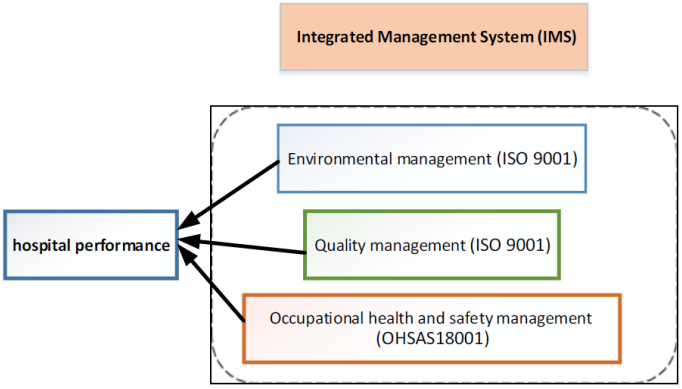

Fig 1. Research conceptual model

For answering research main question, some hypothesis about the variables or structures relations are considered and then these relations will be tested in terms of the proposed model. The main question of this research will be this question that "Does a model ,which is designed and proposed based on some hypothesis between variables, match the studied society gained data?" in other words " Is the model supported in that statistical society?"

Also, the research hypotheses, according to the conceptual model, are defined as follows:

The research main hypothesis: integrated management affects the hospital performance.

The first subsidiarity hypothesis: quality management affects the hospital performance.

The second subsidiarity hypothesis: environmental management affects the hospital performance.

The third subsidiarity hypothesis: occupational health and safety management affects the hospital performance.

MATERIAL AND METHOD

Research Methodology

This research is placed in the casualty research category based on its nature and method, because in this study we have tried to check integrated management impact on the hospital performance. In this path, structural equations statistical technique is used which is a method for studying the causal relationship between the variables. But the performing method of mentioned research, based on research purpose, is from practical category and can be used for those organizations and institutions which are in statistical society territory. The statistical society of this research consists of hospital official staff, which its number was about 233 people, in the research duration.

Data Collecting

In current study, available theoretical references and scientific documentation centers of the country are used to set and regularize the research literature and theoretical principals. The research main means for collecting data consisted of 5 parts: first to third parts were for quality management, environmental management and occupational health and safety management variables respectively. These 3 structures were from the research independent variables. The forth part of the questionnaire, consisted of the hospital performance variables, this structure was from the research dependent variables. Also in the final part of the questionnaire, some questions are mentioned to provide descriptive statistics and demographic attributes of the mentioned statistic society. These ones include educational level, work experience and job. In order to check the questionnaire validity in the first step, the content-related method (expert opinion) has been used and in the second step structure validity method from the confirmatory factor analysis branch has been used.

The statistical methods of the research

In this research multivariable analysis has been used to approve or refute the hypothesis. In this approach more advanced statistical methods such as path analysis and structural equation modeling can be used. Structural equation modeling (SEM) and subset techniques such as confirmatory factor analysis (CFA) and path analysis is referred to a family of strong statistical processes which are used for testing complicated relations between human variables. These kinds of techniques are used in terms of management models to test the hypothesis about relations between variables. Both methods, path analysis and structural equation modeling, are used in the simultaneous presence of the dependent and independent variables for studying the causal relationship between the variables.

The difference is that in path analysis, all variables are obvious or observed, but in structural equation modeling all variables are latent. Structural equation modeling is one of the main and rather new methods for solving complicated models with cause and effect relations which makes the researchers capable of showing simultaneous impacts of variables on each other with emphasis on the role of measurement variances. Since many concepts are naturally latent and are observable via other variables, structural equation modeling technique has found widely used usage. There are various methods for running structural equation model. One of the available methods is covariance-based structural equation model which is used for normal variables and the high amount of samples. So, in current research, LISREL method is used for solving the model. Running the structural equation with covariance-based methods requires its special soft wares and meanwhile LISREL software is more often used. Therefore, LISREL software is also used for running structural equation model. It has to be mentioned, normal and standard error level for checking relations is 0.05 and level of significance is 0.95. In 5-percent error level, critical points in the normalized curve are 1.96 and -1.96. If the regression test significant coefficient (t-value) be more than 1.96, zero hypotheses will be refuted and hypotheses one will be approved and vice versa. In other words in the normalized curve, if the observed error level be in 1.96 and -1.96 range, zero hypotheses and meaningful relation between variables will be approved and if the observed error level be more than 1.96 critical point and less than -1.96 critical point, the hypotheses one and existence of a meaningful relation will be approved.

RESULTS

Descriptive information

From 201 distributed questionnaires 159 copies were returned and therefore, the rate of return was 79/10 percent. In this study totally 159 people from the hospital staff participated that their average age was 38(At least 23 and at last 55). 22 percent were men and 44 percent women, and work experience 3-27 years with a standard deviation of 14/65. In researches that are done by structural equations, checking the normality of the distribution could be performed via testing. The results showed that all the variables are normal. Cronbach's alpha method and factor analysis method are used for stability and validity respectively. The test results are shown in table 1.

Table 1. Factor analysis results

Variable	Question	Factor loadings	Standard error	t-value	Cronbach's alpha value
Quality management (ISO 9001)	Q1	76	42	11.49	847
	Q2	80	35	12.46	
	Q3	88	23	14.33	
	Q4	84	29	13.37	
	Q5	74	45	11.50	
	Q6	77	40	11.74	
	Q7	84	30	13.27	
	Q8	80	35	12.45	
environmental management (ISO 14001)	Q9	66	57	9.10	838
	Q10	74	45	1.66	
	Q11	71	50	1.70	
	Q12	75	44	1.86	
	Q13	65	58	8.89	
	Q14	80	37	11.81	
Occupational health and safety management (OHSAS18001)	Q15	75	44	1.92	870
	Q16	83	31	12.80	
	Q17	82	33	12.40	
	Q18	76	42	11.26	
	Q19	64	59	8.89	
hospital performance (PER)	Q20	85	28	13.43	805
	Q21	77	41	11.59	
	Q22	76	38	11.92	
	Q23	82	34	12.63	
	Q24	78	39	11.81	
	Q25	74	45	1.99	
	Q26	78	40	11.76	
	Q27	59	65	8.24	

As it's shown in the above-mentioned table, the results are representing that for the independent variables of the quality management, all the questions (questions: 1 to 8) load factor is more than 0.5 and on the other hand, all the expressed questions are meaningful and are not in the meaningless range (+1.96, -1.96) and represents the fact that expressed questions for this variable are suitable questions. On the other hand, reliability coefficient, (Cronbach's alpha) for 8 quality management questions, is equal to 0.847 so considering the point that this value is more than 0.7; the expressed questions have suitable reliability. Six questions have been designed for the independent variable of the environmental management, in which, all of the expressed questions (questions: 9 to 14) have the load factor, more than 0.5, and none of them is located in the meaningless range (+1.96, -1.96), on the other hand, reliability coefficient, for these 6 questions, is equal to 0.838, which is more than 0.5, so the expressed questions are validate and have a good stability.

The results for the independent variable of the occupational health and safety management, all of the questions (questions: 15 to 19) load factors are more than 0.5, on the other hand, all of the expressed questions are meaningful and are not in meaningless range (+1.96, -1.96), that shows the expressed questions for this variable are suitable questions , on the other hand, the reliability coefficient (Cronbach's alpha), for 5 quality management questions, is equal to 0.870, considering the point, it is more than 0.7, the expressed questions have a suitable stability. The results related to the dependent variables of the hospital performance indicate that, (questions: 20-27), load factor is more than 0.5, and also, Cronbach's alpha coefficient is equal to 0.805, according to the point, it's more than 0.7, the expressed questions have suitable stability.

Data Analysis and testing hypothesis

Model fitting study

The Chi- square/degree of freedom value in this study has been achieved 1.61, considering that it is less than standard value 2, it has been approved.

The root mean square error fitting index (RMSA), is considered as a favorable index, if this index be less than 0.08, favorable fitting, will be between 0.08 and 0.1 mean fitting, and a value more than 0.1 says, the fitting is unsuitable. According to this point, the amount of this index for the current research has been achieved equal to 0.060 which is suitable. root mean square residual RMRs are also less than 0.05. Due to the fact that the mentioned index in current research is 0.047, it's approved in terms of fitting. The perfect fitting amount for the normed fitting indexes (NFI), the non-normed (NNFI), the comparative fit index (CFI) and the increasing fit index (IFI) are more than 0.9 and according to the fact that the amount of these indexes are 0.94, 0.97, 0.97 and 0.97 respectively and since for all of the four mentioned indexes the calculated value is more than standard, so fitting is approved from these indexes' perspectives. The standard value of the goodness fit index value (GFI) is more than 0.8 and referring to the fact that the value of this index, in the current research, is 0.82, and corresponds with the standard value, indicates a suitable fitting. Accordingly, due to achieved results from the studied indexes, it can be concluded that, the collected data has been suitable and the research model has a good fitting.

Table 2. Model fitting

Fit indices	Standard value		Stimate in model
Chi-square /degree of freedom ((x2/ df))	< 3	Karminz and McLaver (1981)	61/1
Root Mean Square Error of Approximation(RMSEA)	<08/0	Hair, J.F. et al. (1998)[21]	60
root mean square residual (RMR)	<05/0		47
Normed Fit Index(NFI)	>9/0	Bentler and Bonett (1980)[22]	94
Non-Normed Fit Index(NNFI)	>9/0		97
Comparative fit index (CFI)	>9/0		97
Incremental fit index (IFI)	>9/0		97
Goodness-of-fit index (GFI)	>8/0	Hair, J.F. et al. (1998)[21]	82

Studying Structural Model and Measurement of the research

Fig 2 shows the meaningfulness coefficients for the measuring model (t coefficient for the questions and the variables related to them) and for the structural model (t coefficient for the mentioned-paths in the model between variables). This model is used for studying the meaningfulness of the relation between latent variables which are mentioned in the model, if the calculated t coefficient, in 0.05-error level, is not located in the meaningless range (+1.96, -1.96), it can be concluded that, there's a meaningful relation between the two latent variables under study. On the other hand, Fig3. Shows the standard coefficients which indicate the variables impact. According to the proposed model, variables are introduced by abbreviations, so In this regard we have quality management variable (ISO9001), environmental management (ISO14001), occupational health and safety management (OHSAS18001) and hospital performance (PER).

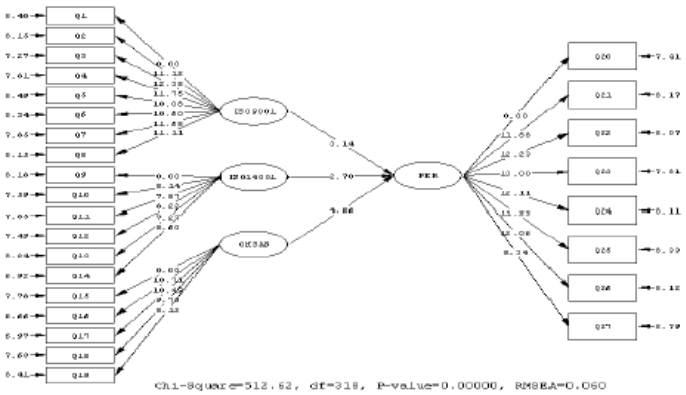

Fig 2.The meaningfulness coefficients model of the subsidiarity hypotheses

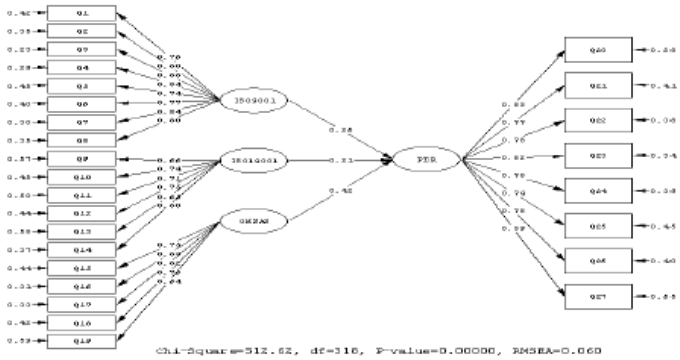

Fig 3.The standard coefficients model of the subsidiarity hypotheses

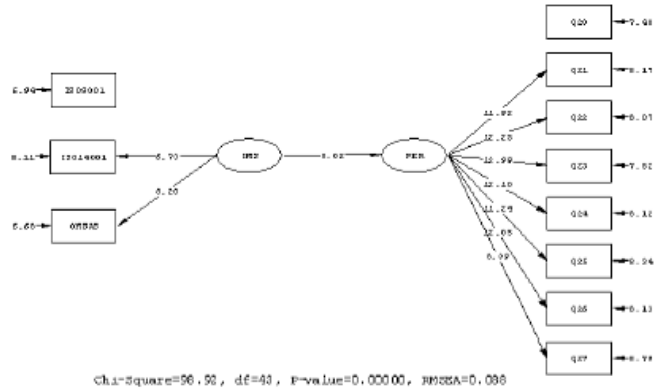

Fig 4.The meaningfulness coefficients model of the main hypothesis

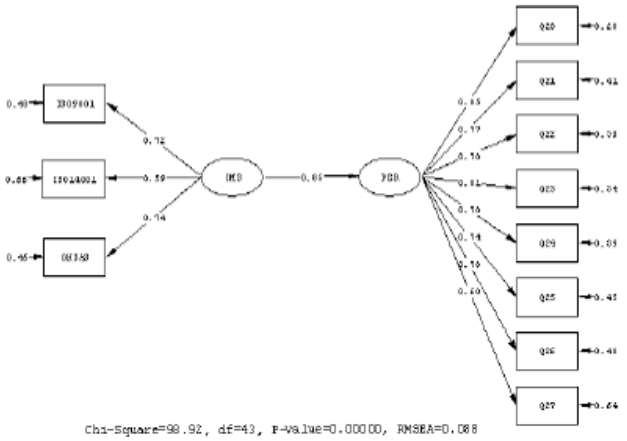

Fig 5.The standard coefficients model of the main hypothesis

Due to the proposed model, a main hypothesis and 3 subsidiarity hypotheses have been tested in which the results of these hypotheses are given in table 3

Table 3.The results of the hypotheses test

	Model Parameter	t-value	Standard rate path	Accept/reject significance
First subsidiarity hypothesis	γ_{11}	3.14	26	Accept
Second subsidiarity hypothesis	γ_{21}	2.70	21	Accept
Third subsidiarity hypothesis	γ_{31}	4.66	42	Accept
Research main hypothesis	γ_{AB}	8.2	85	Accept

In the first subsidiarity hypothesis, the path between the quality management and the paths of the hospital performance, have been studies, according to this, based on this outlet the path is meaningful and the path's gamma coefficient is positive and such a result indicates that environmental management has a positive impact on the performances of Arak hospitals and this hypothesis is accepted.

In the second subsidiarity hypotheses the path between quality management and hospital performance paths have been studies, according to this based on this outlet the path is meaningful and the path's gamma coefficient is positive and such a result indicates that environmental management has a positive impact on the performances of Arak hospitals and this hypothesis is accepted.

The results related to the 3rd subsidiarity hypotheses also is indicating , based on this outlet, the path is meaningful and the path's gamma coefficient is positive and based on such result it can be claimed that occupational health and safety management has a positive impact on the performances of Arak hospitals and this hypothesis is accepted.

Also the results related to the main hypothesis are stating the acceptance of this hypothesis and accordingly in the main hypothesis , which is indicating the positive impact of integrated management on the Arak hospitals performances, and this hypothesis is accepted.

DISCUSSION

In the previous theoretical discussions of research, the research methodology, the results of data collecting and statistical calculations were mentioned. In this section, the results of the research for accepting or refuting the research hypotheses are presented, discussed, and finally the probable limits, which make difficulties for generalize the research results, are expressed and suggestions arising from the research are given for further researches.

This practical research is from the causal type that was done for a period of time. The statistical society of the research was made up of all the official staff. The main tools of the research were questionnaires. The structural equations modeling method by LISREL software was used for assessing stability and validity, fitting latent variables, and the examination of the research hypotheses. As it was mentioned before, in this research LISREL software was used for analyzing the quantitative data and examining research hypotheses in order to run structural equation modeling. The reason for using this approach was that structural equation modeling is a very general multi-variable and powerful analysis technique from multi- variable regression family, and more precisely is the general linear model expansion which enables the researchers to examine a set of regression equations simultaneously. The results of confirmatory validity factor analysis and the curve fitting approve the latent variables. The structural equation modeling indicated that, the research hypotheses were approved and quality management structure had the greatest impact on the hospital performance and 69 percent of changes are explained by this structure. On the other hand, the environmental management system and safety system structures are respectively in the next important ranks of Impact on hospital performance. The results of the structural equation modeling, indicates the positive impact of the quality management on the hospital performance. Although, the impact of the environmental system is more than safety system, these findings nearly correspond with previous researches results.

Also, the achieved results was expressing that collected data from the hospital staff had proper fitting in confirming the model and every one of the questions of this scale have the standard value too. It means data, had the sufficient power for validation in the model, using the confirmatory factor analysis method. Validity consolidation was based of all the statements confirmation which had a meaningful load factor on the hypothesized factors of the hospital performance structure..

Although fitting indexes introduce the mathematical features of the fitted model appropriately, but it must be acknowledged, the fitting process cannot be considered as the model or structure confirmation. Because no model will ever be confirmed, it just can be refuted or does not fit with data, or disapproval of that isn't concluded. Stability coefficients had appropriate desirability so we can say the scale is made up of questions which have high inner correlation.

A remarkable point about the current research is that since the research statistical society is limited to Arak Emam Khomeini Hospital, we should generalize study results to other hospitals cautiously. The fitting indexes sum indicated that data corresponds with the hypothesized model and the conceptual model is approvable.

CONCLUSION

Briefly as the results of approving or refuting the relations and model fitting indexes showed, the conceptual-designed model is valid in the hospital. In the research process, results are really important. Because, the research conclusions, can be bases for solving existing problems or improving situations, into desirable situations.

LIMITS OF THE RESEARCH

Lack of necessary references about the hospital performance during the years of its establishment, was one of the research limits. Also the hospital performance during at the beginning of the integrated management system establishment has not been assessed so comparing the results with the primary situation was not possible and it was one of the research other limits.

SUGGESTIONS

1. According to the research results, it is suggested that the hospital managers should renew management systems establishment certificate and continue it. Meanwhile, they should have more surveillance on implementation of requirements related to these systems.
2. The statistical society of the current study was the staff of one hospital, it is suggested to extend the statistical society to some hospitals in future research.
3. It's suggested to use other soft wares such as ASART PLS for statistical analysis and examining hypotheses and to compare the results in the next level.

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REFERENCES

1. Naderi S. Effect on Performance Standards for Health Promoting Hospitals: A Case Study in Fatemiyeh hospital 2013. Journal of Hospital. 2015;14(2).
2. Zeraatcar A. Waste management in selected hospitals of Tehran University of Medical Sciences: The Knowledge and performance of hospital employee -2012. Journal of Hospital. 2015;12(4).
3. Zaboli R. The Effect of occupational health and safety management standards and environmental management in environmental factors and

employee satisfaction in the Milad industrial complex - A before and after study. Nurse and Physician Within War. 2014;(25).
4. Maleki M. The status of enablers in Tehran Social Security Hospitals based on the EFQM model. Payesh Journal. 2009;9(2).
5. Comoglio C, Botta S. The use of indicators and the role of environmental management systems for environmental performances improvement: a survey on ISO 14001 certified companies in the automotive sector. Journal of Cleaner Production. 2012;20(1):92-102.
6. Riahi L. Compared Distance Function beds in hospitals and Hospital Quality Management System. Health Promotion Management. 2012;2(1).
7. Poulida O, Constantinou L. Development of an Integrated Management System in a Small and Medium-size oil Industry: Safety, Energy and Environment. 2010.
8. Patience A. Integrated Management Systems-A qualitative study of the levels of integration of three Danish Companies. Environmental Management Department, Aalborg University. 2008.
9. Olaru M. Establishing the basis for development of an organization by adopting the integrated management systems: comparative study of various models and concepts of integration. Procedia-Social and Behavioral Sciences. 2014;109:693-697.
10. Al RP. Evaluate the performance of the Total Quality Management model (2000: 9001 ISO) in the hospitals of the Social Security Organization of Tehran Province. Health Information Management. 2009;6(2).
11. Hertin J. Are EMS environmentally effective? The link between environmental management systems and environmental performance in European companies. Journal of environmental planning and management. 2008;51(2): 259-283.
12. Mohammadfam I, Mahmoudi S, Kianfar A. Development of the Health, Safety and Environment Excellence Instrument: a HSE-MS Performance Measurement Tool. Procedia Engineering. 2012;45:194-198.
13. Testa F. EMAS and ISO 14001: the differences in effectively improving environmental performance. Journal of Cleaner Production. 2014;68:165-173.
14. Rabiee A. Effect of the quality management system on job satisfaction in social security hospitals in Tehran. Health and treatment Management. 2010;2(3,4).
15. Yoon SJ. Effect of occupational health and safety management system on work-related accident rate and differences of occupational health and safety management system awareness between managers in South Korea's construction industry. Safety and health at work. 2013;4(4):201-209.
16. Organization WH. Safe Management of Wastes from Health-care Activities. World Health Organization, 2014.
17. Astrachan CB, Patel VK, Wanzenried G. A comparative study of CB-SEM and PLS-SEM for theory development in family firm research. Journal of Family Business Strategy. 2014;5(1):116-128.
18. Qureshi SM, Kang C. Analysing the organizational factors of project complexity using structural equation modelling. International Journal of Project Management. 2015;33(1):165-176.
19. Horng JS. Exploring the relationship between proactive personality, work environment and employee creativity among tourism and hospitality employees. International Journal of Hospitality Management. 2016;54:25-34.
20. Shen W, Xiao W, Wang X. Passenger satisfaction evaluation model for Urban rail transit: A structural equation modeling based on partial least squares. Transport Policy. 2016;46:20-31.
21. Hair J, Andersen RE, Tatham RL, Black WC. Multivariate Data Analysis. Prentice Hall Inc., Upper Saddle River, New Jersey. 1998.
22. Bentler PM, Bonett DG. Significance tests and goodness of fit in the analysis of covariance structures. Psychological bulletin. 1980;88(3):588.