

The Application of Analytic Hierarchy Process (AHP) For Risk-Based Allocation of Internal Audit Resource

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Abstract- This study presents a case study on Tosey Sanaye Behshahr and group of related companies in 2011 to provide a link between the internal audit planning model and its actual application. The theoretical risk-based planning model developed by Patton et al. (1983) addresses the important question of allocating available internal auditing time on the most cost- benefit basis. This case study provides a practical approach to developing a risk index for each organizational unit that might be audited. Using these risk indices, the study develops a functional technique to assign a level of audit intensity to each unit in order to achieve the cost benefit criterion. The Risk index requires determination of three variables. First, a set of risk factors judged common to all units is needed. Second, the relative importance of each factor to the others is required. The Ten auditors individually performed a pair wise comparison of each factor (Saaty 1977). To quantify the last component needed for computation of the risk index, the internal audit director rated the six risk factors for each unit on a five- point scale. The three elements were then combined to arrive at a risk index for each unit.

Keywords: AHP; Risk Auditing.

1 Introduction

These days, competition plays an important and significant role in our every day's activities and professions. In this competition those win who could reach their customers' satisfactions. People who win could stay in the market since they have the capability of competing with others. Customer satisfaction could be in the time, quality or price of the services and products. Auditing as a profession is not an exception. In this profession, those people and institutions could be successful which obey the roles of competition. This means that they provide high quality services with low price and at the least time. To achieve this goal there is no way but to increase efficiency of services. Auditing as profitable profession for the people and the organizations which do auditing, it should have acceptable and good quality. This good quality is needed since based on auditing outcome which is auditing report, the institutions or people will take an important decisions. Therefore, efficiency of auditing service is important and beneficial for both the auditor from one side and for the institutions or the people in these institutions on the other side. Receiving auditing services with high quality with less money will be the benefit of the people and the institutions. For the auditors, giving good auditing services will also benefit the auditors by increasing working capacity, and decreasing in the time and money. By giving good auditing

services they also won't lose their customers and they will get new customers as well. All this will result in benefit increase. The new auditing risk standards force the auditor to find the intentionally and unintentionally faults and to identify and answer these faults. To this aim, auditors should to identify those risks in the economical professions and control them. These standards make use of defined expressions like (should, may, must) in auditing standard number 102. These standards analyze and study important aspects of auditing. These standards may highly affect the evaluation of risk and its details in the past.

While auditing based on the accepted auditing standards, auditor should evaluate the auditing risk. This stage of auditing is not a programmed tool; it is the main part of the documenting process. Auditors' evaluation of this risk will take their attention to important points which worth more attention and emphasize. This is mostly done through questionnaire, observation, and documentation. There are different models for risk evaluation among which is Analysis Hierarchy Process (AHP). AHP is one of the popular techniques of Multi Attribution Decision Making that is used for complex situations that have multi appositve indexes. This was developed by Thomas L. Saaty in 1970s. The base of this model in decision making is on model is based on parallel hidden comparative. This means that the basics of evaluation analysis will be mixed with the available information about alternatives and will

create a group of scales of priority evaluating for evaluating. The aim of this study is to see how AHP will be applied in indicating the importance of the factors making up the auditing risk in the Toseye Sanaye Behshahr and its relating companies.

2 Research Goals

Increasing concentration on risk based auditing (Kashing 1995) leads the concentration toward the development and improvement of evaluating risk quantity methods. This study shows the use of analysis hierarchy process as a method in order to evaluate auditing units from auditing risk viewpoint. In this study regarding the concept of cost-benefit, we practice the allocated internal auditing resources. Thus, after specifying risk index, the limited auditing resources will be specified to certain units. So, the potential lose which the company may face must be evaluated. Therefore, the company must be divided into several different auditing units, and the total expected losses of the company will be equal to the overall amount of each auditing units. So the evaluated auditing risk will be expected to be representative for the company losses. The above mentioned risk is related to specific factors called risk factor. Using auditing strategy, internal auditors through applying a suitable algorithm will be able to dedicating the available time could reduce the evaluated risk. Generally, this research is aimed to suggest a suitable model which to dedicate the limited auditing resources to the different understudy units.

3 Research Hypothesis

Big number of fraud cases in the financial statements in 1990s forced auditors to think of a solution. Publication of two auditing standards statements number 82 in 1997 under the title of "investigating the fraud in the financial statements" and after some years, number 99 in December 2002 about the financial scandals, made the auditors to estimate risk separately in auditing. Right evaluation of risk is a vital part of planning the auditing, and if the auditor evaluate the risk as something other than zero, then auditing will be changed from finding and analysing the faults, to strategic game between the auditors and the management. The above mentioned factors based on research background, and what is true in professional auditing in

Iran, it will be announced as the hypothesis of: there is always a positive relation between evaluated risk and potential loss of every unit in case of not or insufficient auditing.

4 Research Domain

Research location: Behshahr Developing Industry Company and its related companies.

Research duration: financial year (ended Dec, 2011)

5 Sampling Procedure:

Since 100 accessibility to all the companies as well as the under study units was possible for the researcher, therefore he did not use any sampling procedure.

6 Methods of Research:

In the present research, after specifying the risk factors, and the amount of mentioned risk factors by using AHP, the risk of each auditing unit alone will be specified and by using the mathematical model the whole risk of the company will be specified. Then by using a proper base the limited auditing resources will be specified to auditing units. In this study regarding the 100% availability of all the companies and generally the investigated units, we don't use the sampling method.

In field method by the use of a questionnaire, we collect the information which related to the risk of different auditing units, and after extraction of the collected data and information through the questionnaire, with the help of Excel and Expert Choice are analyzed. Worth to mention that, Expert Choice was used in solving the AHP models. Excel soft is also used to make charts and graphs. Then by using the provided base risk by AHP method, the auditing time is specified to each unit.

7 Conclusions

The results from the judged values by auditors are shown below:

Tab.1 Chart_ judged values by auditors

Risk factor	low	median	High
1.size	%6/8	%16/9	%52/3
2.internal controls	%5/3	%32/5	%59/2
3. change in total policies	%4/3	%6/7	%15/1
4.environmentol effects (political,legal,etc)	%8/9	%13/1	%35/9
5.internal and external pressures on managing the business unit	%9/3	%19/4	%23/5
6.kind of activity	%4	%10/8	%22/4

Tab.2 Chart way of calculating amount of risk factors:

Chosen amount for each risk factors	change	median	Risk factors
%17	16/90=17	16/9	Size
%23	32/50=33	32/50	Internal controls
%7	6/7=7	6/7	Changes
%13	13/1=13	13/1	Environment
%19	19/40=19	19/40	Internal and external pressure
%11	10/8=11	10/8	Kind and activity
%100	100	-	Total

Thus more concentration on risk based auditing indicates that the attention is paid to developing and improving of auditing risk's evaluation. This study mentions the use of AHP as a method for evaluating auditing units, through collecting information and amounting the auditing risk factors. The case study of Behshahr Industry Company and the related companies, insist on two important aspects of programming the risk based auditing. First in this research based on Piton, we defined how to calculate risk index for each auditing unit. Another applicable point in this study is suggesting a overall solution for amounting the risk factors through using center biased strategy. Second this study suggested the specification of auditing time method of each auditing units based on ranking units according to the evaluated risks. The most difficult part in this work was to predict the amount of risk reduction in auditing work. Because of some limitation we use a simpler method for dividing and that is resulted from lack of research in the relation between auditing job and results of decreasing auditing risk. In conclusion, we feel the need to do more research about the relation between risk decreasing and internal auditing effort in this field.

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Biography

Esmail Hamid was born in Ahvaz (Islamic Republic of Iran) in 1977. In 2009, he earned his M.A in Accounting from Islamic Azad University, Science and Research Branch in Ahvaz. He is now a faculty member of the Accounting department at Shadegan Islamic Azad University.He has presented papers in international conferences in 2010 and 2011