
The Effect of Creating a Professional Standard of Moral Conduct on Auditor' Moral Decisions in Water and Power Industry in Golestan

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ABSTRACT

The main objective of this study was to evaluate the effect of teaching moral behavior on auditors' moral decisions in water and power industry in Golestan, Iran. Statistical population is all auditors of water and power companies in Golestan Province. They are of professionals and specialists in the area of morality and religion. Twelve auditors familiar with moral and religious subjects holding at least MA degree were selected from water and power companies in Golestan as a sample. DEMATEL technique is of decision-making methods based on paired comparisons. In DEMATEL, Taking advantage of experts' judgments, factors are identified and systematically organized according to principles of graph theory. A hierarchy of available factors is then presented along with their causal effects. The intensity of such correlation is then defined as a numerical score. Results showed that auditors' moral decisions are strongly influenced by moral conduct. religious knowledge and element moral sensitivity are respectively in the highest (22.02%) and the lowest (17.40%) correlation with other elements. element moral knowledge are respectively in the lowest and the highest correlation with other elements. Thus it is concluded that morality is affected by other elements the most. Moral judgment and moral conduct are in highest rank of importance comparing with other elements. Moral sensitivity is placed in the lowest rank. Moral motivation and morality are the causes of moral judgment, moral conduct and moral sensitivity.

Keywords: Moral Judgment, Moral Motivation, Moral Character, Auditors.

Introduction

In a past decade, development and diversification of economic activities in our country and making effort to privatize state companies have resulted in growth of the number of public companies and development of their activities and

increasingly expansion of capital market. This has, also, intensified the necessity of financially supervision over production, commercial and service units in order to preserve public interests, rights and the interests of equity owners and other

beneficiaries (Tehrani, 2001). To meet such needs, reliable and comparable financial information should be provided by companies and various institutes. And to present such information, companies need professional auditors in various departments and taking advantage of dependent auditors to check their information and financial statements. Even in countries with long history of auditing, users of auditing reports expect auditors to discover and publically announce all frauds, thefts and illegal measures. Financial statements, while, are to allow auditor to check and comment on them according to auditing standards. Using bid standards in credit services raises some doubts about auditor judgments in the midst of time pressure, making effort to satisfy employers, and financial scandals of commercial units. Professional societies introduce moral standards and require all sectors to meet these requirements with the aim of passing through the livelihood concept of working and reaching their sublime desires. Moral sensitivity also plays an important role in identification of moral problems. Moral judgments are just made when it is accepted that there are moral problems. Thus, the research is aimed at studying the effect of teaching moral behavior on auditors' moral decisions in water and power industry in Golestan, Iran.

Literature

Here, some available literature on this area is studied as follows.

The statistical analyses of a research by Hassas Yegane and Maghsudi (2011), under the title of 'the effect of principles of professional conduct on how to make auditing judgment in two incentive and practical steps' reveal that there is a significant correlation between principles of professional conduct and motivation and performance. According to the research, Sex is another effective factor and women make

moral judgment so much better. Regarding the positive effect principles of professional conduct having on auditing, it is important to consider adding this subject to BA curriculum.

A research by Ramezani et al. (2010) titled 'an investigation on the effects of sacred moral values on decisions, difficulties of decision-making and emotions resulting from decisions' shows that moral values have real influence on decision-making and what brings about.

Having studied the effects of time pressure on independent auditor' conducts, Mehran and Naeimi (2003), found out that the more committed they were to principles of professional and moral conduct; the more unprofessionally they acted under time pressure. Results also indicated that when time pressure was intensified, unprofessional conducts appeared the most.

In a research aimed at conducting a survey on compliance with the principles of professional conducts by auditors and the supervisions by authorized bodies, Modares and Rafiei (2008) stated that auditors complied with the principles of professional conduct. However, subject' ages had influence on their results about auditors' compliance with professional standards. They also found out that women complied with principles of professional conduct much better.

In a case study by Heydari and Marzughhi (2012), the general techniques of decisions made by university principals in Shiraz are examined. According to findings, no significant correlation was observed between the technique of decisions made by principals based on major and sex. This is while there was a significant correlation between principals with various experiences in making intuitive decisions. Such differences were not observed in other styles of decision-making. There is also a significant correlation between the wise, instant, intuitive, and

preventive and dependence patterns of decision-makings.

Hayda Ismaeil (2005) conducted a study titled by 'the effect of moral sensitivity and moral context on auditors' moral judgments. Results showed that moral sensitivity and moral context have interactive effects on auditors' moral judgments.

Marcella (1995) studied the effects of factors such as working in private or public sections, the size of company, the size of working groups, technology level of company, experience, education, age, sex and job position on independent auditors' moral standards. Results showed that age is the only effective factor on independent auditors' moral standards.

In a research, Singa Pakdi (1999) found out that morality and social responsibility in long term had positive effects on organizational success because they convinced customers to accept and trust on products and services presented.

Methodology

Statistical population is all auditors of water and power companies in Golestan Province. They are of professionals and specialists in the area of morality and religion. Twelve auditors familiar with moral and religious subjects holding at least MA degree were selected from water and power companies in Golestan as a sample. In 1971, DEMATEL technique was presented by Gabus and Fonetla. DEMATEL technique is of decision-making methods based on paired comparisons. In DEMATEL, Taking advantage of experts' judgments, factors are identified and systematically organized according to principles of graph theory. A hierarchy of available factors is then presented along with their causal effects. The intensity of such correlation is then defined as a numerical score.

Findings

Stages of DEMATEL Techniques

Drawing a diagram of interactive effects of elements

In this stage, components (religious knowledge) are placed on top. The correlations of apexes are then identified as the reciprocal influence of elements on each other. Elements are compared by paired method. Experts' judgments are questioned only to study the interactive effects between elements.

Finding the interaction strength of elements

Here, one of the main and accurate steps is to find the interaction strength of various elements. Accordingly, a questionnaire was developed and experts were questioned about the intensity of such interactions.

The strength of interaction between elements is measured in a scoring context from zero (0) to four (4) as follows:

Table 1. Measuring interaction

Rating	Impact
4	Quite a lot
3	Lot
2	Least
1	Very low
0	No effect

It should be noted that as judges generally tend to select "average" and the consequent deviation in results, interaction strength is not considered. Since there is a large spectrum of comments on interaction strength of elements, the final analysis would be based on the mean score of experts' comments in following relation:

$$a_{ij} = \frac{1}{H} \sum_{j=1}^k x_{ij}^k$$

Creating a Matrix (Group Decision-Making) of the Direct Relation Strengths

Based on diagram 1, the interactive strength of elements can be shown as a matrix of direct relation strengths (see matrix 1). In the matrix, entries of any intersection are indicators of the influence of an element in a row on another element in a column. Zero

shows that there is no correlation between the elements of the pertinent intersection. (The final matrix has been calculated based on the comments presented by fourteen experts). In this matrix:

Matrix 1. the strength of direct correlation of \hat{M}

	Variable names	Option	A	B	C	D	E	Sum
$\hat{M} =$	Ethical behavior	A	0.00	2.93	3.29	3.43	3.36	13.00
	Moral character	B	3.21	0.00	2.14	3.00	2.79	11.14
	Moral Motivation	C	2.21	3.57	0.00	3.50	2.57	11.86
	Moral judgment	D	3.29	3.00	3.07	0.00	2.64	12.00
	Moral sensibility	E	2.07	2.21	3.07	2.43	0.00	9.79
						MAX=		13.00

Max = 13.00

$$\alpha = \frac{1}{13.00} = 0.076$$

Finding the Relative Strength of Direct Correlations (Matrix M)

In this stage, any entry of matrix \hat{M} is multiplied by the largest inverted row sum which calculated above ($M = \alpha \times \hat{M}$). Multiplication does not make any deviation in

available answers because for possible relations answers are directly between both elements of A and B. Indirect effects are obviously less than direct effects. Matrix 2 shows the relative strengths of direct correlations.

Matrix 2. The relative strengths of direct correlations (M)

	Variable names	Option	A	B	C	D	E
$M = \alpha \times \hat{M} =$	Ethical behavior	A	0.000	0.225	0.253	0.264	0.258
	Moral character	B	0.247	0.000	0.165	0.231	0.214
	Moral Motivation	C	0.170	0.275	0.000	0.269	0.198
	Moral judgment	D	0.253	0.231	0.236	0.000	0.203
	Moral sensibility	E	0.159	0.170	0.236	0.187	0.000

Finding Direct and Indirect Correlations of Elements (Creation of a Matrix for T General Correlations)

In this stage, the total sum of an indefinite array of direct and indirect correlation of elements (with all possible feedbacks) is calculated as a geometric progression based

on graph rules. To do this calculation, a matrix of $(I - M)^{-1}$ should be used. Sum of such progression is T matrix in which I is the unit matrix of $n \times n$.

$$T_{t \rightarrow \infty} = M + M^2 + M^3 + \dots + M^t = \frac{M(I - M^t)}{(I - M)} ; \lim_{t \rightarrow \infty} M^t = 0$$

$$= \frac{M}{(I - M)} = M(I - M)^{-1}$$

$$T = M(I - M)^{-1}$$

Matrix 3. $(I - M)^{-1}$

Variable names	Option	A	B	C	D	E
Ethical behavior	A	2.513	1.800	1.799	1.894	1.776
Moral character	B	1.539	2.428	1.556	1.678	1.566
Moral Motivation	C	1.553	1.716	2.478	1.775	1.620
Moral judgment	D	1.628	1.710	1.695	2.588	1.648
Moral sensibility	E	1.334	1.425	1.454	1.491	2.240

Matrix 4. The relative strength of direct and indirect correlations (general correlation matrix T)

	A	B	C	D	E	Sum(R)	R+J	R-J
A	1.513	1.800	1.799	1.894	1.776	8.782	16.349	1.214
B	1.539	1.428	1.556	1.678	1.566	7.767	15.847	-0.313
C	1.553	1.716	1.478	1.775	1.620	8.142	16.122	0.162
D	1.628	1.710	1.695	1.588	1.648	8.270	16.696	-0.156
E	1.334	1.425	1.454	1.491	1.240	6.943	14.794	-0.907
(J) جمع	7.567	8.080	7.980	8.426	7.851			

Using the above relations, the strength of all direct and indirect correlation can be calculated. Accordingly, with T matrix we have.

Finding a Hierarchy or a Possible Structure for the Effective Factors (Calculating the Sum of Rows and Column in T Matrix and Identifying the Causal factors)

The order of interactive influence of various elements determines a possible structure

Calculation of $(I - M)^{-1}$

The unit matrix is deducted from M matrix and the resulting matrix is called invertible matrix. The results are summarized in the following matrix:

from the hierarchy of those elements to improve or solve the problems. To have access to a possible structure of direct and indirect correlation, the order of elements according to their mutual effect and their order based on being affected are studied in matrix 5 as follows:

$$r = [r_i]_{n \times 1} = \left[\sum_{j=1}^n t_{ij} \right]_{n \times 1}$$

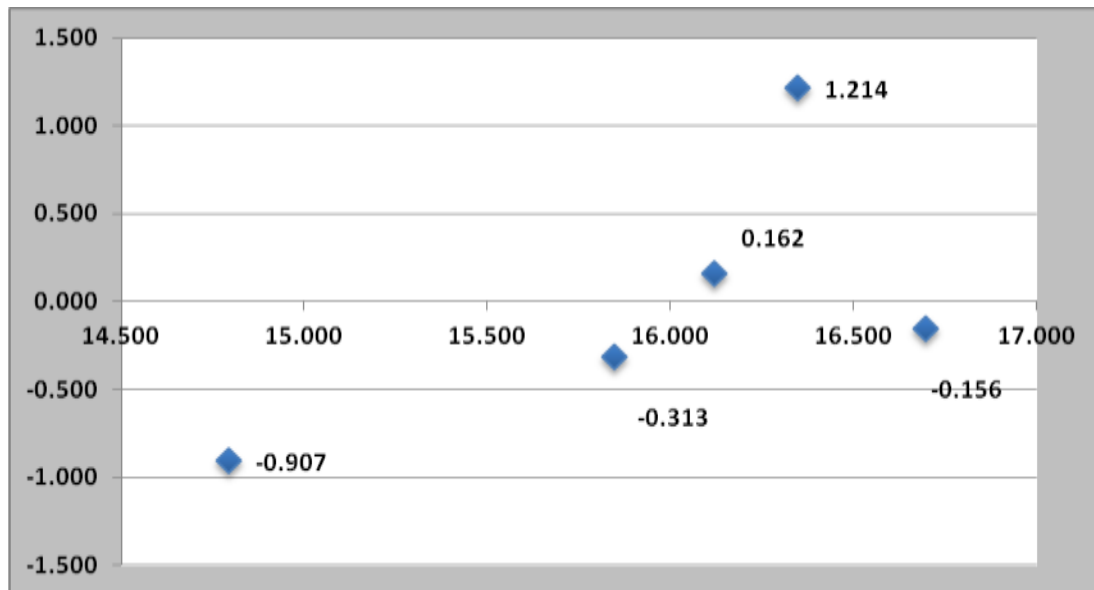
$$c = [c_j]_{n \times 1} = [c_j]_{1 \times n} = \left[\sum_{j=1}^n t_{ij} \right]_{1 \times n}$$

Matrix 5. The order of influence and being affected based on T matrix

reason	Thus the elements (factors)	Based on the maximum total row (R) - (Impact)	Thus the elements (factors)	Based on the maximum sum of a column (J) - (interact)	Thus the elements	Based on)R+J(Thus the elements	Based on)R-J(
Cause	A	8.789	D	8.426	D	16.696	A	1.214
Cause	D	8.270	B	8.080	A	16.349	C	0.162
Caused	C	8.142	C	7.980	C	16.122	D	-0.156
Caused	B	7.767	E	7.851	B	15.847	B	-0.313
Caused	E	6.943	A	7.569	E	14.794	E	-0.907

The largest row sum (R) shows the order of elements having strong influence on other elements like element A in matrix 5. The largest column sum (J) indicates the order of elements which are affected like element D which is under the influence of other elements the most. Thus, the order of elements from column (R) is an indicator of the hierarchy of influential elements (causes) and the order of elements from the column (J) shows the hierarchy of affected elements (effects).

The real position of each element is designated in the ultimate hierarchy of columns (R+) and (R-). And (R+) refers to the strength of an element (factor) (along x axis) in terms of being effective and being affected. This is while that (R-) is in the position of an element along the y axis. If (R-) is positive, it is definitely effective and if it is negative, it means that it is under the influence of other elements.



The position of elements of moral conduct (cause) in hierarchy

Using Hierarchical Structure in Developing Decision-Makers' Perception

When decision-makers are well informed of elements based on their effects on other

elements (column R), the order of elements based on effects they receive (column J) and the ultimate structure of influential elements (positive R-) and the affected elements (negative R-), as well as their strength in

terms of being influential or being affected (R+J), they would have an expanded perception on the structure of the problem. Some results of the hierarchal structure of element are as follows:

Matrix 5 shows that the order of influential elements (R) is different from the order of affected elements (J).

In Matrix 5, column R shows that element A (religious knowledge) and element E (moral sensitivity) are respectively in the highest (22.02%) and the lowest (17.40%) correlation with other elements. The following table shows effectiveness in percentage as follows:

Column J shows that element D (moral judgment) and element A (moral knowledge) are respectively in the lowest and the highest correlation with other elements.

In matrix 5, column R+J shows the priority of each element over the other ones. Here, element D with value of R+J=16.696 is in first priority and element E with value of R+J=14.794 is in fifth rank.

In matrix 5, column R-J shows the causal correlation of elements. Here, elements A and C are positive and causes and elements B, D and E are negative and effects.

Factors	Fluence rate (per cent)
A	%22.02
D	%20.72
C	%20.40
B	%19.46
E	%17.40
Sum	%100

Factors	Fluence rate (per cent)
D	%21.11
B	%20.25
C	%20.00
E	%19.67
A	%18.97
Sum	%100

Discussion and Conclusion

Results disclose that auditors' moral decisions are strongly influenced by moral conduct. The results are in agreement with results of previous research. Here, other findings are presented:

The largest row sum (R) means that there are elements (cause) such as element A in matrix 5 that have strong effect on other elements. The largest column sum (J) indicates that there are elements (effect) such as element D that are strongly affected by other elements. Thus, the order of elements in column (R) is an indicator of the hierarchy of influential elements and the order of elements in column (J) shows the hierarchy of affected elements.

The real position of each element is designated in the ultimate hierarchy of columns (R+J) and (R-J). And (R+J) refers to the strength of an element (factor) (along x axis) in terms of being effective and being affected. This is while that (R-J) is in the position of an element along the y axis. If (R-J) is positive, it is definitely effective and if it is negative, it means that it is under the influence of other elements.

When decision-makers are well informed of elements based on their effects on other elements (column R), the order of elements based on effects they receive (column J) and the ultimate structure of influential elements (positive R-J) and the affected elements (negative R-J), as well as their strength in terms of being influential or being affected (R+J), they would have an expanded perception on the structure of the problem. Some results of the hierarchal structure of element are as follows:

Matrix 5 shows that the order of influential elements (R) is naturally different from the order of affected elements (J).

In Matrix 5, column R shows that element A (religious knowledge) and element E (moral sensitivity) are respectively in the highest (22.02%) and the lowest (17.40%) correlation with other elements.

Column J shows that element D (moral judgment) and element A (moral knowledge) are respectively in the lowest and the highest correlation with other elements. Thus it is concluded that morality is affected by other elements the most.

In matrix 5, column R+J shows the priority of each element over the other ones. Here, element D with value of $R+J=16.696$ is in first priority and element E with value of $R+J=14.794$ is in fifth rank. It is concluded then that moral judgment and moral conduct are in highest rank of importance comparing with other elements. And moral sensitivity is placed in the lowest rank.

In matrix 5, column R-J shows the causal correlation of elements. Here, elements A and C are positive and causes and elements B, D and E are negative and effects. Thus, moral motivation and morality are the causes of moral judgment, moral conduct and moral sensitivity.

Suggestions

Regarding results, it is suggested to water and power companies to put the purpose of developing moral conduct among auditors at top of the list and annually predict particular programs.

Among other factors, moral conduct is also in highest sensitivity. Managers are suggested to introduce particular models in order to develop moral conduct among auditors and praise those complying with moral principles. Regarding the research results in which the degree of being affected by other elements is negative, companies are recommended to plan for intensifying the effectiveness of these elements.

Previous research shows that regulation of some rules and principles has had positive effect on auditors' moral conducts and judgments. Thus, it is suggested to regulate fix rules and manage moral and professional conducts and judgments.

As auditors act as trustees for professionally progressing and improving organizations, companies are recommended to ask their auditors to make moral decisions with high sensitivity and take wise approaches on probable violations.

Previous research reveals that moral context also plays a crucial role in making moral judgments. So, it is suggested to companies to put more effort into creation of a supporting setting of good conducts.

Additionally, previous results disclose that personal characteristics are also effective on moral judgments. Therefore, water and power companies are the ones to invest a great deal of time and effort in raising auditors' personal standards.

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