

Interpretive Structural Modeling of Corporate Social Responsibility Indicators

Elham Zarezadeh¹, Mahmoud Moinuddin² & Hassan Dehghan Dehnavi³

^{1,2,&3} Islamic Azad University, Yazd Branch, Department of Accounting, Yazd, Iran.

A Today with the development of different industries and business units, the effects of their
B activities on society and the lack of social reporting have caused a gap between the
S expectations of economic units and society. Nowadays, corporate social responsibility is
T regarded as an integral part of the economic books and financial articles in the world and the
R tendency to invest in companies which apply corporate social responsibility and reporting is
A increasing. This study was applied in terms of objective and descriptive-survey in terms of
C type. The statistical population included the theoretical texts related to corporate social
T responsibility. In this study, the interpretive structural modeling (ISM) and MICMAC analysis
were used to express the relationships between corporate social responsibility criteria after
reviewing the literature of corporate social responsibility. After data analysis, the factors and
variables were classified into four different levels and drawn according to the ISM graph. The
results obtained from MICMAC analysis indicated that all of the variables were in the cluster
of communication variables while no variable was in the group of dependent, independent,
and autonomous variables. Determining the relationships between factors and the type of
factors can result in a better understanding of the subject and making appropriate decisions
about corporate social responsibility.

Keywords: Corporate Social Responsibility, Interpretive Structural Modeling, Dimensions of Corporate Social Responsibility.

1. Introduction

While governments have traditionally been solely responsible for improving people's living conditions, societies' needs are more than the amount that the governments are able to afford. In this regard, the viewpoint is changing from governments to the role of the economic activities of individuals and corporates in society and it is concentrated on businesses; In such a way that leading companies seek to differentiate themselves from others in terms of the degree of engagement and attention to social responsibilities (Kansal et al., 2014). Considering the collapse and financial scandal of some companies such as Enron during the early 21st century, the position of corporate social responsibility in the global economy, especially international companies has increased to improve environmental and social conditions. Align with the development of global trade, recent studies indicated a move towards greater disclosure at the international level. Comparing the nations' understanding of corporate social responsibility and the role of business units in society has expanded in the new century and there has been a significant international development in the corporate social responsibility movement in this century. Considering the human, social and environmental rights is highly significant and at the international level. This development is clearly visible in the evolution of studies in the field of corporate social responsibility and the relationship between government and corporate social responsibility has been evaluated. Academic researchers in the field of business have indicated an increase in interest and attention to corporate social responsibility during the recent years. Social and environmental responsibility has emerged in some political and legal documents and has become significant internationally. Nowadays, corporate executives face the dynamic and challenging task of using socio-ethical standards to be accountable against business practices. Increasing pressure for social responsibility is one of the most significant business challenges for companies (Hasas Yeganeh and Barzegar, 2013).

Companies, especially those working in global markets require a balance between their social, economic, and business elements while seeking to maximize the shareholders' value. Corporate social responsibility has gained a prominent role in the academic field in the new millennium (Visser, 2006)

and many consider it as an absolute necessity for companies to define their role in society and standards and use socially, morally, legally and environmentally responsible in their business (Lindgreen, 2004; cited in Ghasemi Hosseinabadi, 2016). Corporate social responsibility is perceived as the commitment of an individual or organization to society - including people and the physical environment - when the consequences of their activities do not only affect themselves. Corporate social responsibility has attracted the attention of academics, researchers, NGOs and the government and has become one of the essential dimensions of corporate operations (Vilanova, Lozano, & Arenas, 2009; cited in Ghasemi Hosseinabadi, 2016). The increase of globalization in trade, strategic significance of stakeholder relations, and company's image management are the three key factors and the main motivators in increasing the significance of corporate social responsibility (Azim, Ahmed, & Islam, 2009; cited in Ghasemi Hosseinabadi, 2016). Due to global competition and companies' involvement in environmental challenges, as well as the growth of shareholder expectations during the recent decades, social responsibility has become a major issue for many companies (Chen et al., 2018).

Thus, companies require a strong strategy to overcome problems and create long-term customer interaction and increase revenue. In this regard, conducting social responsibility activities for companies can be effective (Birim, 2016). In fact, companies consider social responsibility as a tool through which they can maximize the benefits of their company. Unfortunately, the reports and statements of experts and objective evidence in the context of society demonstrate that the situation of our society about social responsibility, both in terms of individual and organizations and institutions is not in good condition. Today we see that there are debates about the social indifference and the damage that it has caused in parts of the society. Paying more attention to social responsibility and institutionalizing it in the public figure is an issue that needs to be cultured and become a public concern so that its effects and blessings will be spread in the society as in the past. In this regard, investors' tendency for higher socially responsible companies or customer loyalty to high socially responsible companies can decrease systematic risk (Cheung, 2016). The increasing public awareness of social responsibility issues has made stakeholders put more pressure on companies to disseminate information on social responsibility practices through voluntary and mandatory disclosure (Gray et al., 1661). Many companies have dedicated their resources and efforts to disseminating extensive information on social responsibility issues in their annual reports (Li and Wang, 2013).

In some countries, organizations work in the field of social responsibility. For example, in Denmark (an institution similar to our Ministry of Economy), there is a secretariat called the Secretariat of Social Responsibility, which is managed by successful managers of the non-governmental sector, and most of the actions and services and resources related to the social and welfare and Social responsibility capacity are governed by this. Today, much of Denmark's social welfare budget is provided, (especially for people with special needs including the disabled, kids, etc.), through the social responsibilities of companies, businesses and banks, which imposes a financial burden and reduces the public budget of this country. Although Denmark is a rich country, it has not overlooked this capacity for social responsibility. In this country, the entire disability sector is covered by a non-governmental organization and all of the necessary expenses and services in this region are provided by this institution, and the Secretariat of Social Responsibility is responsible for identifying the referral of these capacities. In Iran, there are many of these capacities that, if introduced in the set, then it could help the country to provide better and higher quality social services so that it could be attached to the capacities that the government is responsible for ensuring the welfare of society. Therefore, the social responsibilities of organizations towards the people should become a concern among officials and the people. Then we will have a healthier society and as a result of that we will have a higher social capital. In a society with higher social health, people will feel more dynamic and vibrant and there will be no laziness, social loneliness, depression and social harm in the society. Since it is difficult for users to identify investment opportunities and threats appropriately without access to sufficient information, thus researchers in the present study aimed to identify the dimensions and components of corporate social responsibility, determine the relationship between dimensions and indicators, and specify their type through structural-interpretive modeling (ISM) as it provides a set of different and related factors and dimensions to be structured in a

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comprehensive organized model and explains the complex pattern of the conceptual relationships between a set of variables using some basic concepts of graph theory. ISM is a tool for integrating the perceptions of different groups and is used for applying integrated and systematic thinking about a complex subject under investigation. This method is interpretive and it means that it is based on the judgment of experts to decide which and how variables are related to each other and is also structural. In other words, it elicits the overall structure of a complex set of factors based on relationships and is also a modeling technique, i.e. it displays the specific relationships of variables and the overall structure in a graphical model.

2. Review of the Literature

The emergence of corporate social responsibility in the economic, scientific and political communities around the world during the recent decades can be regarded due to the more complex business environment, globalization of economy, and the emergence of multinational corporations, demand for business transparency, politics pressures of governments, emergence of social and environmental crises, etc. The concept of corporate social responsibility was first raised by two Harvard professors, Berle and Means in the book "The Modern Corporation and Private Property" in 1930. However, the evidence indicated that the official term "corporate social responsibility" was first appeared in Bowen's book "Social responsibility of a businessman" in 1953. Sen, 2011; cited in Ghasemi Hosseinabadi, 2016). Social responsibility is a framework for the ethical supervision of business units, according to which business units should take the actions which improve the conditions of society but not the activities which are to the detriment of society. Social responsibility seeks to include environmental and social factors in the business decisions of companies so that the economic performance of the company along with social and environmental performance are in such a way to be beneficial to the business unit, society, and environment. In fact, the activity of business units should balance between making a profit from economic activities, social justice in society, and environmental preservation. In other words, making a profit for shareholders should not be to the detriment of the people in the society and the environment. In other words, companies should report the profits to their shareholders to consider the considerations of social justice and environmental preservation. Observing the human rights such as non-employment of child labor, non-compulsion of workers to do overtime, observance of the rights and protection of customers' health, humanitarian activities for the members of society, observance of environmental regulations such as non-pollution of water, air, and environment. (Hasas Yeganeh and Barzegar, 2013). According to Weiser (2012) in the book "Generations and Steps of CSR", the evolution of responsibility of business units can be divided into five economic eras which have overlap: the era of greed, era of altruism and humanity, era of chaos, era of management and era of responsibility. Each of these eras display different steps in the evolution of corporate social responsibility which can be summarized in the following evolutionary steps:

Step 1: Corporate social responsibility in the era of greed is defensive in such a way that corporate responsibilities and persistence are normally limited and used only if it is a defensive shield for the value of the company's stock. Thus, it is not uncommon for employees to have voluntary plans in order to motivate and increase productivity and costs for controlling pollution and avoiding fines.

Step 2: Corporate social responsibility in the era of altruism through financial aid and support for social and environmental activities for empowering social groups and civil society organizations

Step 3: Corporate social responsibility in the era of chaos is seen primarily as the promotion of an opportunity to promote a company's brand, image and reputation, and as an advertising tool.

Step 4: Corporate social responsibility in the era of management for strategic activities, corporate social responsibility in business units aims to commit to the principles of environmental and social management in the business cycle and formulate policies, goals, programs and auditing the corporate social responsibility.

Step 5: Corporate social responsibility in the era of responsibility focuses on identifying the causes of instability through innovation in business models, transforming processes, products, and services nationally and internationally.

Thus, corporate-strategic social responsibility at the micro level is focused to support social

and environmental issues with the implementation of the company's strategy but not necessarily a change in strategy (Hasas Yeganeh and Barzegar, 2013). Corporate social responsibility is an evolving concept which is regarded as a way for companies to integrate their social, environmental, and economic concerns into values, cultures, decisions, strategies, and operations in a transparent way to develop better practices for participation, welfare, and social improvement (Turker, 2009).

Knight (2007) believed that corporate social responsibility is a conceptual system with a diverse and well-related terminology referring to society and the environment and considers some parameters for social role of companies in a clear, responsive, and consistent way with a multidimensional business ethics approach (Asadi et al., 2018). In fact, the debate that companies are responsible for a wide range of stakeholders beyond shareholders is embedded in the concept of corporate social responsibility. Although the concept of corporate social responsibility has been extensively discussed in theory and practice, the recent definitions of corporate social responsibility still focus on corporate responsibility to different stakeholders (Darabi et al., 2016).

In addition, the European Union (2001) in the context of promoting corporate social responsibility defined it as a concept in which companies consider the social and environmental dimensions of their business operations and interact with their stakeholders voluntarily. In summary, the term corporate social responsibility refers to the emergence of a movement which seeks to include environmental and social factors in corporate business decisions, business strategy, and accounting for increasing social and environmental performance along with economic dimensions so that it can be beneficial to the business unit, society, and environment (Hasas Yeganeh and Barzegar, 2013). Therefore, in a summarized way we could cite that social responsibility helps to focus not only on utilitarianism, but along with proper social management in such a society, people will have access to more social services, social rights and then responsibilities will be respected, and public participation and oversight of the community will be increased and in such circumstances people will feel satisfied for living in that community. Moreover, the provision of social services within organizations will help the survival of the organization by increasing the public satisfaction and customer satisfaction.

The more social capital is valued, the less social harm will be made, and naturally the sense of the responsibility in people will be increased and indifferences will be decreased, and they will share and engage in each other's joys and sorrows. Thus, one of the important pillars of the increasing social cohesion is paying attention to the issue of social responsibility in its various dimensions. Social responsibility reduces the effects of development which occur in various economic, social, cultural, etc. dimensions by helping the vulnerable class of society and this class feels less effects of development.

Research Background

Social responsibility has always been one of the most controversial topics in accounting articles. In this section, some of the studies conducted in this field are mentioned: Ghorbani et al. (2016) studied the social responsibility of oil refining companies through exploratory mixed research method and concluded that although six inclusive themes and 23 organizing themes were extracted in the first stage, using thematic analysis, four inclusive themes related to customer, environmental preservation, staff-related issues, and local community development, 18 organizing themes, and 109 basic themes were confirmed in the validation phase as the dimensions of social responsibility of oil refining companies. Mehravar et al. (2019) studied the relationship between social responsibility with tax evasion and earnings management of companies listed on the Tehran Stock Exchange. The results indicated a significant relationship between social responsibility with tax evasion and earnings management of companies listed on the Tehran Stock Exchange and found a significant relationship between economic, legal, ethical and humanitarian dimensions of social responsibility with research-related variables. Esmaeilpour et al. (2019) studied the company's social responsibility and weakness of internal controls: An empirical test of stakeholder theory and signaling. In addition, they found a significant negative relationship between disclosure of corporate social responsibility and weakness of internal controls according to stakeholder theory. In other words, the goal of corporate social responsibility is resolving the conflicts between stakeholders, maximizing shareholder wealth and increasing the effectiveness of the company's internal controls.

Akbari et al. (2019) studied the effect of corporate social responsibility on customer loyalty and brand position: the mediating role of customer value. The research results indicated the positive effect of corporate social responsibility on customer loyalty and brand position, as well as the positive effect of customer value on customer loyalty and brand position in tourism companies in Tehran. The results showed that customer value is a mediating variable which plays a role in the relationship between corporate social responsibility, customer loyalty, and brand position. In a study conducted by Dodangeh et al. (2019) entitled "The effect of social responsibility on the emotional and behavioral responses of tourists after the failure of services at four- and five-star hotels", the objectives and hypotheses of the study were investigated. In the present study, the sample size was estimated at 384 using the Cochran's formula. The data collection tool was a questionnaire and its validity and reliability were confirmed. The results revealed that social responsibility has a significant positive effect on the loyalty, satisfaction, and trust of tourists. The findings indicated that tourists' satisfaction and trust have a significant positive effect on their loyalty. Amin et al. (2015) studied the relationship between state-owned companies and dimensions of corporate sustainability performance and its effect on the market value of company, as well as the moderating effect of the concentration of government ownership. The results indicated that state-owned companies have a significant positive relationship with environmental, governance, ethical, economic and overall sustainability performance of the company but have no relationship with the social dimension. In addition, corporate sustainability performance has a significant positive effect on the market value of companies. However, state-owned companies have no significant effect on the relationship between corporate sustainability performance and market value. Khodaei (2017) investigated the relationship between fulfilling social responsibility and real earnings management and accounting in companies with family and non-family ownerships. The results indicated an inverse relationship between corporate social responsibility and real earnings management and accounting.

Furthermore, family ownership has no effect on this relationship. Amir Husseini and Ghobadi (2016) studied the mediating effect of financial performance on the corporate social responsibility relationship of institutional ownership. The results showed the effect of the mediating variable of financial performance on the relationship between social responsibility and institutional ownership. Pour Ali and Hejami (2014) evaluated the relationship between the disclosure of corporate social responsibility and its dimensions with institutional ownership among the companies listed on the Tehran Stock Exchange. The research findings showed a significant negative relationship between the disclosure of social responsibility, disclosure of information related to the relationship among employees, production, and the environment with institutional ownership. Nevertheless, there is no significant relationship between the disclosure of information related to social participation and institutional ownership. Gul et al. (2020) analyzed corporate social responsibility based on theories of agency and stakeholders and stated that social responsibility includes seven dimensions of society, company management, product diversity, employee relationships, environment, human rights, and quality and safety of product. Timbate and Park (2018) divided companies into two categories of higher and lower than 50% social responsibility disclosure using the defined indicators to study social responsibility. In a study, more than 160 social responsibility indicators were placed in two general categories of environmental and social based on the guidelines of the Global Reporting Initiative to examine the relationship between disclosure and performance indicators. Tito et al. (2019) studied the effect of voluntary disclosure of social responsibility on financial performance through comparing top banks in Mozambique and South Africa. In this study, content analysis was conducted to evaluate the dimensions of corporate social responsibility and measure the financial performance of return on assets and return on investment. The results indicated a significant positive relationship between the disclosure of social responsibility and financial performance. In addition, South African banks disclose more information about social responsibility compared to Mozambican banks. Park (2019) performed a study entitled "Corporate social responsibility as a determinant of corporate credit in the aviation industry." This study examined the effect of corporate social responsibility (CSR) activities on the company's reputation in the aviation industry. In this study, the information was analyzed through the information of airline service users and structural equation modeling. The results indicated that a higher degree of social responsibility has improved customer attitude and satisfaction.

Yun and Cheung (2018) compared the internal and external effects of corporate social responsibility on corporate financial performance. The results indicated that external social responsibility increases the market value of the company while has a negative relationship with operational profitability. Internal social responsibility increases the corporate operational profitability but has no effect on the market value. Park et al. (2017) studied the relationship between corporate social responsibility and systematic restaurant risk with respect to the role of geographic diversity adjustment in the United States. There was a significant inverse relationship between geographical diversity, positive social responsibility activities, and systematic risk and also the role of geographical diversity adjustment was slight. Furthermore, there was no significant relationship between negative social responsibility activities and systematic risk.

3. Methodology

Interpretive structural modeling method was used to conduct this study. This method is a structural interpretive method raised by Agarwal in 2006. This method is an interactive learning process in which a set of different and interrelated elements are structured in a comprehensive systematic model. Interpretive structural modeling provides an insight into the relationships between the different elements of a system and presents a visual representation. Since in this method the judgment of a group of people determines whether there are relationships between the elements or not, the above-mentioned method is called interpretive. In addition, this method is called structural method since the basis of relationships is an all-around structure being extracted from a set of variables. This method is a modeling technique which indicates the specific relationships and the general structure of relationships in a diagram model. Designing the interpretive structural model is a way of evaluating the effect of each variable on other variables. This design is an inclusive approach for measuring relationships and is used for developing a model framework to make the overall objectives of the study possible. In this study, first the questionnaire of determining the relationships in interpretive structural modeling method was completed by accounting experts. Then, the ISM graph was drawn as graphic modeling of relationships by converting the relationship matrix and creating consistency in the relationship matrix and after that the type of variables was determined using MICMAC analysis.

Interpretive Structural Modeling Process

The development steps of interpretive structural modeling are formed in seven steps:

Determining Variables

Interpretive structural modeling begins with a list of variables which are relevant to the problem or subject (Kanan and Noorhaq, 2007). Such variables are obtained by studying the literature, interviewing experts, or through a questionnaire (Tizru, 2010).

Obtaining the Structural Self-Interaction Matrix

This matrix has the dimensions of variables which are mentioned in the first row and column of such variables, respectively. Then, the binary relationships of the variables are determined by some symbols (Tizru, 2010). The structural self-interaction matrix is based on the opinions of expert groups (Jitesh Thakkar et al., 2007). In order to determine the type of relationships, it was suggested to use the opinion of experts based on different management techniques such as brainstorming, nominal group techniques, etc. (Singh et al., 2003). The following symbols can be used for determining the type of relationship:

Table 1. Conceptual relationships in the formation of structural self-interaction matrix

The concept of symbol	Symbol
I leads to j (row leads to column)	V
j leads to i (column leads to row)	A
There is a two-way relationship i and j	X
There is no valid relationship	O

(Jitesh Thakkar et al., 2007)

Obtaining the Reachability Matrix

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The reachability matrix can be obtained by converting the SSIM matrix relationship symbols to numbers zero and one. Such rules are mentioned in Table 2 (Jitesh Thakkar et al., 2007).

Table 2. How to convert conceptual relations to numbers

j to i	i to j	Conceptual symbol
0	1	V
1	0	A
1	1	X
1	0	O

(Jitesh Thakkar et al., 2007)

Matching the Reachability Matrix

At this stage, the transitive state between factors should be considered. If i leads to j and j leads to k , then i should lead to k (Jitesh Thakkar et al., 2007). Huang et al. used mathematical laws to create consistency so that the power $(k + 1)$ was added to reachability matrix and was $k \geq 1$. However, the operation of adding the power should be according to the Boolean rule ($1 = 1 \times 1$, $1 = 1 + 1$) (Huang et al., 2005).

Determining the Level of Variables and Forming a Conical Matrix

In order to determine the level and priority of variables, the reachability set and the antecedent set are determined for each variable. The reachability set of each variable includes the variables which can be reached through this variable and the antecedent set includes the variables through which this variable can be reached. Then, the intersections of reachability and antecedent sets of all factors are determined and if the reachability set is equal to the all intersections of that factor(s), it will be considered as a high level. In order to obtain other levels, the previous levels should be separated from the matrix and the process should be repeated. After re-determining the levels, the received matrix is arranged in order of levels and the new matrix is called as conical matrix (Jitesh Thakkar et al., 2007).

Drawing Graphs

First, the criteria are sorted out based on the priority obtained from top to bottom. Using the matrix obtained from the received matrix sorted based on levels, the structural model can be drawn by nodes and lines. If there is a relationship from i to j , it is indicated by an arrow from i to j (Jitesh Thakkar et al., 2007).

MICMAC Analysis

This analysis aims to identify and analyze the influence and dependence of variables. In this analysis, the variables are divided into four categories based on the power of leadership and dependence: 1- Autonomous variables which have weak leadership and dependence. Such variables are relatively unconnected to the system and have weak relationship with the system. 2- Dependent variables which have low leadership but are highly dependent. 3- Communication variables which have high leadership and high dependence. These variables are non-static since any change in them can affect the system and finally the system feedback can change these variables. 4- Independent variables which have strong leadership, but weak dependence (Ravi et al., 2005).

Results

In this study, the participants included the experts who were familiar with the subject scientifically and experimentally and were selected using the snowball sampling method. These experts included the professors and researchers who had conducted research on social responsibility during the recent years and had at least 10 years of effective activities in the field of accounting and an academic doctorate in accounting. In this study, 10 subjects were selected based on the selection criteria of experts. The time scope of the research was from January 2016 to August 2021 and the survey of experts was related to June 2021.

Seven Steps of Conducting Interpretive Structural Modeling

Determining the Variables

Interpretive structural modeling begins by identifying factors and variables. Sometimes, the

set of elements which need to be structured is pre-defined.

However, it is often necessary for the participants to produce the required elements. In this study, the research literature and expert opinions were used to produce a set of elements.

Then, such criteria were provided to the experts and 22 indicators and criteria were selected for the concept of corporate social responsibility, which are the same variables of interpretive structural modeling.

Table 3. Criteria extracted from research literature

Economic criteria	Social criteria
Competing with other companies	Creating social capital
Improving economic performance and maximizing profits	Making efforts to create social justice
Increasing investment and improving job opportunities	Strengthening the fight against corruption and rent-seeking
Economic boom and growth and development of the company	Adherence to social values
Timely payment of taxes	Social participation and development
Making efforts to increase revenues	Ethical criteria
Developing the market share	Honesty
Reducing the costs	Using ethical standards in the company
Creating new and high- quality products	Trust
Improving company productivity	Encouraging charitable and non-profit services
Preserving the wealth of shareholders	Adherence to business commitments
Legal criteria	Having a moral charter
Observing social rules and regulations	Execution of justice
Alignment of organizational policies with social justice	Observing religious principles and values
Adherence to the principles of business ethics	Avoiding fraud
Integrity in the implementation of social responsibility orders	Environmental criteria
Governance criteria	No damage to the environment
Increasing the internal and external relationships	Observing the environmental laws
Using advanced technologies	Saving energy
Gaining social responsibility competencies	Waste management
Economic criteria	Social criteria
Considering growth opportunities	Tendency to green energy
Ability to achieve goals	Encouraging the production of recycled products and their reuse
Gaining a social responsibility brand	Considering the environmental impacts on products and services
Creating appropriate relationships with suppliers	Customer criteria
Employee criteria	Providing high-quality services and attracting customer satisfaction
Creating a healthy and hygienic work environment	Preserving privacy and customer information
Making efforts to maintain employee health	Preserving customer privacy
Holding training courses for employees	Striving for the welfare of customers and society
Using employees' opinions and their participation in decision making	Supplying products and services needed for customers
Providing welfare facilities for employees	Labeling the products and services
Providing appropriate salary and insurance	Gaining customer loyalty

Making efforts to improve the work ethic of employees	
Providing the required facilities for the timely retirement of employees	

Table 4. Criteria derived from expert opinions

Criterion	Number	Criterion	Number
Waste management	12	Making efforts to create social justice	1
Tendency to green energy	13	Commitment to social values	2
Creating a healthy and hygienic work environment	14	Strengthening the fight against corruption and rent-seeking	3
Using employees' opinions and their participation in decision making	15	Improving economic performance and maximizing profits	4
Providing welfare facilities for employees	16	Reducing company costs	5
Observing social rules and regulations	17	Creating new and high-quality products	6
Adhere to the principles of business ethics	18	Improving company productivity	7
Increasing internal and external relationships	19	Honesty and integrity	8
Creating appropriate relationships with suppliers	20	Adherence to business commitments	9
Providing high-quality services and customer satisfaction	21	Avoiding fraud	10
Gaining customer loyalty	22	Observing environmental law	11

Obtaining Structural Interaction Matrix (SSIM)

The SSIM matrix should be prepared with experts' opinions. For this purpose, the SSIM matrix was completed as follows (Table 8) with the opinions of 10 experts who were present in the fuzzy screening stage using the assumed relationships as shown in Table 3.

Compatibility of Reachability Matrix

The Boolean rule was used to match the reachability matrix and the reachability matrix was obtained with the final match as shown in Table 9.

Forming the Reachability Matrix

The reachability matrix is conducted by replacing the symbols in the SSIM matrix with the relations defined in Table 4 and practically the symbols V, A, O and X are converted into a set of numbers zero and one.

Table 5. SSIM matrix

22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Indicators
A	A	X	A	A	A	X	A	A	A	A	A	A	A	A	X	A	A	A	A	A		1
A	X	A	O	O	A	A	A	O	O	O	A	A	A	A	O	O	A	X	X			2
X	A	X	X	A	V	V	V	V	V	V	V	V	X	X	V	V	O	V				3
A	V	V	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A					4
O	X	V	A	V	X	X	O	A	A	A	A	A	A	A	X	X						5
O	V	V	A	O	A	V	O	V	O	A	V	A	A	A	V							6
A	V	X	A	A	O	X	X	V	A	X	A	A	A	A								7
X	X	A	A	X	A	V	V	V	V	V	A	V	X									8
X	X	A	X	V	V	V	V	V	V	V	V	V										9
A	O	A	A	O	V	V	V	O	V	V	V											10
X	X	A	A	A	V	V	V	V	O	O												11
A	A	A	X	V	V	V	A	X	V													12

		3	19	1	14	3	9	1	4
		1	20	1	15	2	10	3	5

Based on the relations in the reachability matrix and based on the grading information of the variables, the graph of the relations between the variables was obtained by removing the final transitive relations. Then, the numbers are replaced by the main research criteria. Fig. 2 indicates the ISM graph.

MICMAC Analysis

In order to perform MICMAC analysis, it is necessary to calculate the influence and dependence of each variable. The influence equals the sum of the row figures of each variable and the dependence equals the sum of the column figures of each variable. Then, a coordinate table is formed based on the two dimensions of influence and dependence and enter the variables according to the influence and dependence calculated in Table 11. The final classification of criteria is displayed in Fig. 3.

Drawing Figures

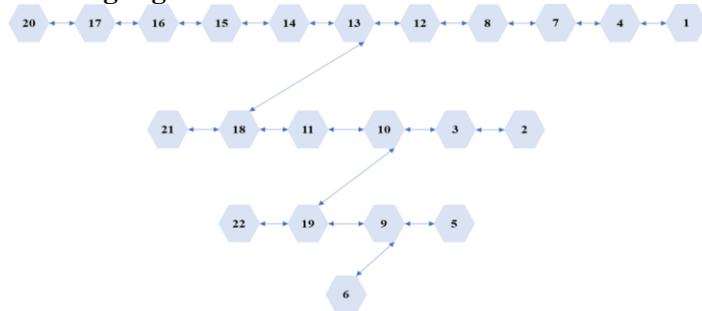


Fig. 1: ISM graph

Table 8. Influence and dependence

Influence	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	Indicators
18	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1
20	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	2
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	4
21	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	5
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	6
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	7
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9
19	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	10
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11
18	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	12
15	0	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	0	1	1	0	1	1	13
16	0	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0	1	1	14
16	0	1	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	15
21	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16
21	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	17
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	19
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	21
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22
	16	21	22	15	21	22	22	22	22	22	22	19	18	17	22	22	18	20	22	20	21	22	dependenc

on the variables such as waste management using the opinions of employees and their participation in activities, making efforts to create a healthy work environment, tendency to green energy orientation, compliance with society rules and regulations, and adherence to social values, adherence to the principles of business ethics, and has direct effect on the variables such as making efforts to create social justice, strengthening the fight against corruption and rent, providing welfare facilities for employees, improving economic performance and maximizing profits, reducing costs, creating new and high-quality products, honesty and integrity, improving productivity, increasing internal and external relationships, adhering to business commitments, creating appropriate relationships with suppliers, avoiding fraud, gaining customer loyalty and providing high-quality services, as well as attracting customer satisfaction.

5. Suggestions

The most significant executive suggestions resulting from this study are creating the required platform for disclosing social indicators in companies with the support of top management of companies, institutional shareholders and related officials to teach sustainable social performance of companies in Iran, creating the necessary incentives and incentives in companies with the development of appropriate regulations by relevant institutions in the field of corporate reporting, including the Stock Exchange Organization in cooperation with bodies active in the social and cultural fields to meet the expectations of society. The results of this study indicated that the production of high-quality and new products has the greatest effect on the company and the implementation of corporate social responsibility. Since one of the most significant prerequisites for the industrial development of countries and the survival of industrial units and business institutions of such countries in the world market and ensure their competitiveness in the world market due to the quality of manufactured goods. The high cost of some products and services in Iran along with their low quality and the inability of domestic products to compete with similar foreign products is one of the significant problems and challenges of business and economy which has led to a reduction in investment in the manufacturing sector. In order to achieve the desired stage and create new and quality products, the companies or organizations are recommended to increase the quality of products, accuracy and efficiency of production, increase customer satisfaction and the quality level of after-sales service, align ISO standards in production and after-sales service, and turn the quality of production and after-sales service into a competitive advantage and also increase the credibility of the product title in the target markets. In order to encourage production and industrial units to improve the quality of their products, companies whose products are of high quality and can compete with similar foreign products should be encouraged and supported by the government. The Organization for Standardization and Industrial Research should play a more active role in supervising the quality of domestic products and provide the required information and technical services to the country's production units through recognizing the environmental and managerial barriers which exist for improving quality. Accordingly, improving the quality of production and the quality of domestic products to be competitive with foreign samples should be a priority for the country's production units and the government should provide the necessary support to increase investment in the production sector and prevent the outflow of currency from the country. In order to disclose the company's social and environmental activities as a mechanism by which the company's accounting and accountability tasks will be conducted, the managers of organizations are recommended to inform a wide range of the stakeholders of the social and environmental effect of the company through a clear statement of the values and goals of the company. Furthermore, managers should prepare a comprehensive report which includes information such as goals and intentions, activities and subsequent actions and performance by considering different issues of social responsibility. By considering the position of corporate social responsibility, the Accounting Standards Development Committee is recommended to formulate a standard in this regard to be used by all companies. Further, monitoring and ensuring the appropriate implementation of the laws related to the disclosure of corporate social responsibility needs a separate annual report in this regard. It is suggested to consider the ways of strengthening the executive guarantee of publishing such reports.

In order to better implement social responsibility in the organization, managers are suggested

to regard the following factors:

Creating an appropriate cultural environment in the workplace for practicing and applying social responsibilities.

Creating fair opportunities for organizational development according to approved laws and regulations regardless of ethnicity, gender, language and other personal characteristics.

Removing the obstacles to the realization of legal behaviors in the organization and adherence to the law.

Recognizing the organizations in the organization and their constructive interaction with each other and eliminating the obstacles to the formation of organizations.

Ensuring clarity and non-discrimination in free access to information and full implementation of the law on access to information.

Creating appropriate processes for interaction among employees and manager without fear of negative consequences.

Ensuring the full implementation of labor law and regulations for the payment of salaries, wages and a coordinated payment system.

Identifying and eliminating the barriers and problems of workplace safety.

Improving the conditions of safety, as well as physical and mental health and attempting to gain the necessary standards in this field in line with the environment and the individual.

Respecting the privacy of employees and protecting their personal information.

Strengthening the sense of responsibility among employees against the occurrence of bribery, financial and administrative corruption in the organization through training, information, and incentive policies

Observing transparency in purchase, distribution and contract policies including the observance of the time of responding to written demands.

Obligation to contracts and avoiding unilateral rights and authorities and the inclusion of unfair cases in arranging contracts with customers.

Strengthening the culture of arbitration and mediation institutions and dispute resolution mechanisms, as well as mechanisms for establishing mediation institutions.

Ensuring that the services are tailored to the requirements of different customers and respecting their various tastes.

Clarity of compensation mechanisms for stakeholders and customers.

Provide clear and sufficient information about the price such as deductions and final cost, terms and costs of goods and services to customers.

Supporting professional institutions as a national asset while getting involved with economic crises

Based on to the results of this study, the following suggestions are provided for further research in the fields related to the present study:

Ranking the companies in terms of implementing social responsibility

Identifying the factors affecting the social responsibility of the organization for increasing the level of responsibility in companies

Identifying the factors affecting the development of corporate social responsibility

It is recommended that since the ISM network is a comprehensive network, the weight of all criteria can be calculated using the analytic network process (ANP). Furthermore, a framework can be created for evaluating the subjects with an unknown structure by combining ANP with the proposed research model. In this regard, first the relationships and network of relationships established created through ISM and then the most effective alternative can be selected from the alternatives using the ANP (if the goal is determined).

References

- Akbari, M. Mehr Ali, M. Sidamiri, N. Knowledge, m. Ramazanpour Nargesi, q. (2019). The Impact of Corporate Social Responsibility on Customer Loyalty and Brand Position: The Mediating Role of Customer Value, *Journal of Tourism and Development*, 8 (4), 1-22.
- Amin, V. Faghani Makrani, Kh. Zabihi, A. (2018). Study of the relationship between state-owned companies, dimensions of corporate sustainability performance and company value, *Quarterly Journal of Public Accounting*, Volume 4, Number 2, pp. 92-75.
- Amir Hosseini, Z. Ghobadi, M. (2016). Social Responsibility Reporting, Financial Performance and Institutional Ownership, *Management Accounting Quarterly*, No. 28, pp. 66-55.
- Asadi, L. Vaez , A. JerJer Zadeh, A. Kaab Amir, (2018). The Effect of Corporate Social

- Responsibility Dimensions on Value Creation of the Pharmaceutical and Non-Pharmaceutical Companies Listed on the Tehran Stock Exchange, *Journal of Health Accounting*, 7(1), 1-31.
- Azar, As. Faraji, H. (2010). *Science of Fuzzy Management*, Tehran: Mehraban Publishing.
- Birim, Bahadir. (2016). Evaluation of corporate social responsibility and social media as key source of strategic communication. *Procedia - Social and Behavioral Sciences*, Vol 235, pp. 70 – 75.
- Chen, W., Zhou, G. & Zhu, X. (2018). CEO tenure and corporate social responsibility performance. *Journal of Business Research*, Vol 95, pp. 292-302.
- Cheung, A. (2016). Corporate social responsibility and corporate cash holdings. *Journal of Corporate Finance*, Volu 37, pp. 412-430.
- Darabi, R. Waqfi, H. Salmanian, M. (2016). Investigating the Relationship between Social Responsibility Reporting and Value and Risk of Companies Listed on Tehran Stock Exchange, *Journal of Value and Behavioral Accounting*, 1 (2), 193-213.
- Dudange, S. Haji Karimi, B. Mozaffari, M. Explore, K. (2021). The Impact of Social Responsibility on Tourists' Emotional and Behavioral Responses after Service Failures in Four- and Five-Star Hotels (Case Study: Tehran), *Journal of Applied Research in Geographical Sciences*, 22 (65), 43-60.
- Ghasemi Hosseinabadi, F. (2016). Corporate Social Responsibility and How to Measure It, *Bi-Quarterly Journal of Applied Studies in Management and Development Sciences*, 1 (2), 54-43.
- Gray, R., Kouhy, R., & Lavers, S. (1995). Corporate social and environmental reporting: A review of the literature and a longitudinal study of UK disclosure. *Accounting, Auditing & Accountability Journal*, 8, 47–77.
- Gul, F. A. Krishnamurti, C. Shams, S. & H. Chowdhury (2020). “Corporate Social Responsibility, Overconfident CEOs and Empire Building: Agency and Stakeholder Theoretic Perspectives”, *Journal of Business Research*, Vol. 111, No. 1, pp. 52-68.
- Hasas Yeganeh, Y. Barzegar, Q. (2013). Presenting the components and indicators of the social dimension of corporate responsibility and its current situation in Iran. *Socio-Cultural Development Studies*, 2 (1): 209-234.
- Huang J. J., Tzeng G. H., Ong C. S., (2005). Multidimensional data in multidimensional scaling using the analytic network process, *Pattern Recognition Letters*, 26, 755 7 67.
- Ismailpour, R. Rezaei Pita Noei, Y. Gholamreza Pour, M. (2019). Corporate Social Responsibility and Weakness of Internal Controls: An Empirical Test of Stakeholder Theory and Marking, *Journal of Value and Behavioral Accounting*, 4 (8), 319-338.
- Jitesh Thakkar, S. G. Deshmukh, A. D. Gupta & Ravi Shankar, (2007). Development of a balanced scorecard An integrated approach of Interpretive Structural Modeling (ISM) and Analytic Network Process (ANP), *International Journal of Productivity and Performance Management*, 56 (1), 25-59.
- Khodayi, B. (2017). Investigating the Relationship between Social Responsibility and Real Profit Management and Accounting in Family and Non- Family Owned Companies, *Quarterly Journal of Management and Accounting Studies*, Volume 1, Number 4, pp. 323-308.
- Li, Q., Luo, W., Wang, Y., & Wu, L. (2013). Firm performance, corporate ownership, and corporate social responsibility disclosure in China. *Business Ethics: A European Review*, 22, 159–173.
- Mehravar, M. Kargar, H. Azari Jahromi, F. Baygan, N. (2019). Investigating the relationship between social responsibility and tax evasion and profit management of companies listed on the Tehran Stock Exchange, *Journal of Accounting and Management*, 2 (7), 49-65.
- Monika Kansal, Mahesh Joshi, Gurdip Singh BatraMonika Kansal, (2014), Determinants of corporate

- social responsibility disclosures: Evidence from India, *Advances in Accounting, incorporating Advances in International Accounting*.
- Park, C. (2019). Information Direction, Website Reputation and Ewom Effect: A Moderating Role of Product Type. *Journal of Business Research*, 62 (1), 61-67
- Park, S, Song, S, Lee, S. (2017). Corporate social responsibility and systematic risk of restaurant firms: The moderating role of geographical diversification, *Tourism Management*, Vol 59, pp. 610-620.
- Pourali, M. Hajjami, M. (2014). Relationship between social responsibility disclosure and institutional ownership in companies listed in Tehran Stock Exchange, *Iranian Management Accounting Association*, 3(10), 135.
- Ravi, V. Shankar, R. Taiwari, M. K. (2005). Productivity improvement of a computer hardware supply chain *International Journal of Productivity and Performance Management*, 54,(4), 239-255.
- Singh M.D., Shankar R, Narain R , Agarwal, (2003). An interpretive structural modeling of knowledge management in engineering industries, *Journal of Advances in Management Research*, 1, 28°40.
- Timbate, L. & C. K. Park (2018). “CSR Performance, Financial Reporting, and Investors’ Perception on Financial Reporting”, *Sustainability*, Vol. 10, No. 2, pp. 522- 538.
- Tizro, A. (2010). *Agile Supply Chain Model Design - Interpretive Structural Modeling Approach*, Zob Ahan Co., PhD Thesis, Tarbiat Modares University, Tehran.
- Turker D. (2009). «Measuring Corporate Social Responsibility: A Scale Development Study», *Journal of Business Ethics*, 85 (4), 411-27.
- Victim, m. Faqih, A. Azizi, Sh. (2019). Model of social responsibility of oil refining companies, by exploratory mixed research method, *Journal of Organizational Culture Management*, 18 (55), 1-26.
- Visser.W. (2012). ”The Age of Responsibility: CSR 2.0 and the New DNA of Business”, John Wiley & Sons Ltd.