

A model for integrated reporting framework with an Islamic approach (Nonlinear analysis-fuzzy logic)

Kazem Goodarzi^a, Fariborz Avazzadeh Fath^{b,*}, Abdul Khaliq Gholami Chenaristan Olia^c

^aDepartment of Accounting, Yasouj Branch, Islamic Azad University, Yasouj, Iran

^bDepartment of Accounting, Gachsaran Branch, Islamic Azad University, Gachsaran, Iran

^cDepartment of Public Administration, Yasouj Branch, Islamic Azad University, Yasouj, Iran

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Abstract

The main goal of this research is to develop a model for an integrated reporting framework with an Islamic approach. First, the structure and components of the framework were determined by the researcher using theoretical foundations. Then, the structure and components of the framework were modified and finalized by the experts with the knowledge base. A structured form of the components was used twice to judge 32 experts in integrative reporting. The final model was determined by combining the Delphi technique with fuzzy logic and nonlinear data analysis. This template includes 7 Guidelines and 8 Content elements. In the Islamic section, a number of principles were determined as a guideline and several components were set to contribute to the content of the Islamic part of the report.

Keywords: framework; reporting; integrated, Islamic, content, Delphi, fuzzy
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1 Introduction

Corporate reporting has been an essential tool for communication between the company and its stakeholders since its inception and has been a means of responding to liability [21]. Several factors have revolutionized the corporate reporting. The expansion of the international capital markets, Changes in the financial structure of organizations and the nature of their activities becoming more complex and as a result increasing the volume and variety of business transactions [14], broken business models, new technologies, global growth and high data, changes in the expectations of stakeholders from reporting and global crises and financial collapse of 2008 [20], and finally, more transparency is needed [12], They've had a very real idea of how to think about corporate reporting. In short, the kind of information required to evaluate the current and past performance of organizations and their future flexibility is much wider than the existing business reporting model. While the information provided has increased, key disclosure gaps continue to exist.

Electronic governance has been the most important tool of e-government. This type of monitoring is primarily in the direction of the general purpose of electronic surveillance and is the most important means of achieving its goals.

*Corresponding author

Email addresses: kgoodfinance@gmail.com (Kazem Goodarzi), favazzadeh2010@gmail.com (Fariborz Avazzadeh Fath), gh.khalegh@yahoo.com (Abdul Khaliq Gholami Chenaristan Olia)

e-surveillance aims to reduce in-person supervision and referrals and increase the use of electronic communications in favor of efficient mechanisms [2].

To overcome the shortcomings and limitations of corporate reporting and solve the mentioned challenges, different types of reporting such as management reporting, corporate governance reporting, social responsibility reporting and ultimately sustainable reporting were provided by different institutions. However, for many reasons, they were unable to achieve the desired end. Excessive proliferation of corporate reports in a fragmented and isolated manner, often in numerous types and large sizes can sometimes lead to adverse effects, i.e., weaker disclosure systems [12].

The Integrated Report, introduced on a practical basis in early 2000, is potentially able to address these challenges [7]. Despite increasing pressure to provide integrated reports, there was no guidance in producing such reports [18]. In December 2013, the International Integrated Report Framework was published by the International Integrated Reporting Council. The main purpose of the framework is to guide organizations in the context of a wide range of information required by investors and other stakeholders to evaluate the long-term perspective of the organization in a clear, concise, relevant and comparable format [15]. However, the fundamental question is whether this framework can be a guide for all societies with different economic, social and religious conditions. Does this framework meet the needs of Muslim communities in preparing integrated reporting with the Islamic approach?

Given the structural differences between Islamic economics and Western economics, accounting and corporate reporting techniques that are common in the capitalist world are not able to properly represent the rights of different stakeholders, and therefore ensure them from the movement of the commercial unit in the circuit of social justice, fairness and consideration of the rights of others [1]. One of the most important issues in accounting and reporting is to pay attention to Islamic principles and values, because on the one hand, communities with Islamic religion and religion can have an important effect on the style and practice of accounting and reporting [13], and on the other hand, traditional accounting and reporting, which is based on Western-World-View, can no longer meet the needs of reporting in Islamic countries [10].

Therefore, in this research, a model has been prepared for integrated reporting guidance principles with an Islamic approach. In addition to increasing literature related to the Integrated Report, this research can help custodian organizations develop an integrated reporting framework to meet the needs of Islamic societies. It also helps producers of an integrated report in Islamic societies to prepare an integrated report that reflects the observance of Sharia standards, and Islamic law in all areas and activities of the organization.

2 Literature review

Regulators, standards, companies, professional accounting professionals and NGOs all believe that the next step in the evolution of reporting is to provide information about the process of creating company values over time. Two decades ago, these individuals and entities, as a council, came together to create a new approach for corporate reporting, in a way that would meet the information needs of the 21st century. They concluded that an integrated report was the desired approach. The Council's vision is to reach a world in which integrated thinking in the business process of all public and private sectors is established, and integrated reporting as the norm of corporate reporting facilitates this process. An integrated thinking and reporting cycle, which leads to efficient and productive allocation of capital, will act as a factor for financial stability and sustainability [15].

2.1 Integrated reporting

Integrated reporting is the latest type of reporting in the evolution of corporate reporting in such a way that it may even become the 21st-century revolution in corporate reporting [17]. KPMG believes the integrated report should show the link between the strategy, governance and financial performance of an organization and the economic environment. The International Integrated Reporting Council believes that the Integrated Communications Report is a succinct and concise report on how strategies (strategy), leadership (management), performance and perspectives of an organization, in its context and external environment, lead to value in the short, medium-term, and long-term [15].

2.2 International integrated reporting framework

The International Integrated Reporting Framework was officially released in 2013 by the International Integrated Reporting Council (IIRC). The International Integrated Reporting Council is composed of legislatures, standards-holders, companies, professionals in accounting, academies and non-governmental organizations. All members of the Alliance believe that the next step in the evolution of corporate reporting is to inform about value creation. The

International Framework for Integrated Reporting has been created to meet this need and provide the foundation for the future. The council's long-term vision is to reach a world in which integrated thinking is established as the main flow in the business process of the public and private sectors and to facilitate integrated reporting as the norm of corporate reporting. This framework contains the following Help Principles [15]. This framework contains 7 guiding principles and 8 content elements.

2.3 Previous researches

Ehtesham Mehr et al. [8], in research, examined factors affecting the convergence of integrated reporting in the companies listed on the Tehran Stock Exchange. The results showed that the factors of corporate governance, strategy, financial performance, the position of the industry and the pressure of the stakeholders affect integrated reporting. Corporate governance had the most and industry position had the least impact on integrated reporting in terms of impact.

Darougeh Hazrati and Nekooizadeh [6], in a study, examined the relationship between the features of the Committee of Audits and Unified Reporting. The research population is the research of accepted companies' behaviour in the Tehran Stock Exchange. 100 companies were selected as statistical samples by systematic elimination method from 2012 to 2019. Also, the research hypothesis was tested based on multivariate regression. The results showed that there is a significant relationship between the size of the IGC, and the number of IGC meetings, and also according to the results, there is a significant relationship between the financial expertise of IC, the independence of IC members and Integrated Reporting.

Farrokhi et al. [9], in a study entitled Key Dimensions and Factors of Corporate Sustainability Reporting with the Islamic Approach, after reviewing Superior Frameworks of Stability Reporting, explained the key dimensions and components of corporate sustainability reporting by the Islamic Society's culture and environmental conditions. To this end, the data collected by inductive analysis of the qualitative content of Islamic texts is subject to the experts' judgment. After the evaluation of 110 questionnaires, factor coefficients and structural equations were analyzed, and the pattern of corporate sustainability reporting with an Islamic approach in seven dimensions (management and leadership, progress and excellence, work and production, human, social, economic and environmental factors) and 36 components were presented, respectively.

Kamali and Koveiti [16], in a study entitled Integrated reporting framework: a new approach to disclosure of intellectual capital, concluded that although the disclosure of intellectual capital information is possible in the form of any kind of reporting framework, such as Unified Report, Comprehensive Initiative Report and traditional financial statements, the Unified Reporting Framework presents a more appropriate-approach to disclosure and reporting of intellectual capital and given that the framework has not been supported so far, the use of an integrated framework for intellectual capital disclosure could provide a new approach to intellectual capital disclosure.

Zouari and Dhifi [23], reviewed the impact of ownership structure on the level of financial and non-financial information disclosure in integrated reporting, and its impact on national legal systems. A sample of 431 European companies belonging to Civil or Normal rights were selected from 2012 to 2019. The results of the linear regression confirm the existence of a relationship between ownership concentration, institutional ownership as well as management ownership and integrated report.

Casnato et al. [3], in a study entitled "Social Capital and Integrated Report: Loss of Legitimacy when Speech and Action Is Not The Same", considered the case study conducted by Beck and Associates in 2017 about a Bank of Australia from 2004 to 2013, to investigate whether integrated reporting affects relationship capital. And does it help to recover lost trust in an organization? The findings revealed how a bank hit by a major scandal in 2004 was able to recover its legitimacy through integrated reporting.

Abdullah [1] in a study titled "Conventional and Islamic Perspective in Accounting: Potential for Alternative Reporting Framework" explains Islam's philosophical and practical view and compares it to the Western philosophical view and its impact on how to record transactions and financial reporting, Shibli explains why it is necessary to provide a theoretical framework for financial reporting and alternative standards for Islamic institutions that may potentially have relative convergence or common reporting framework. This article reviews the fundamental philosophical and functional differences between conventional and Islamic accounting. The purpose of this study is to perform a detailed analysis of specific images taken from both of these systems and to highlight how these differences affect the registration of financial transactions and the preparation of financial reports for a wide range of stakeholders. The growth of non-traditional business units such as Islamic financial institutions primarily undermines the application of conventional accounting standards in the preparation of Sharia-compliant financial reporting. Along with this, there are considerable concerns about the wider application of Islamic standards and accounting frameworks to achieve reporting practices

that satisfy information needs in general. In the background of such a context, this article raises the fundamental question of how to achieve potential convergence between the two systems to provide users with a transparent and comparable status of financial information, leading to an alternative framework for financial reporting.

After nonlinear analysis of data using the Delphi technique and fuzzy logic, a pattern was determined as follows. The results showed 7 Islamic principles as guiding principles governing the unified Islamic report. The principle of responsibility in Islam encourages organizations to act in the interests of society in their daily activities. Organizations based on faith and responsibility that make trusteeship and responsiveness to trust should disclose complete information. It is a form of worship that is an exact representation. The concept of full disclosure ensures that all information required by stakeholders is provided to help them in making decisions. In this situation, the behavior of organizations and companies must be based on the principle of responsibility, accountability and justice. The information revealed about the activities of companies and their impact on society in general must be accurate, complete, reliable and free of bias. Full disclosure of information is a form of worship that can help in salvation in this world and the hereafter.

3 Methodology

This is an applied and descriptive research. It is a field survey and survey that is carried out in a single-sectional way. In terms of the type and method of data collection, this research is qualitative-quantitative research that uses e-form tools for data collection. In fact, the present study is a qualitative-quantitative combination with an exploratory approach in terms of objective, functional and type, to prepare a model for different parts of an integrated Islamic reporting framework. In this study, the researcher prepared the initial questionnaire and then, after consultation with the help of professors, consultants and experts in the field, modified the initial questionnaire. The final questionnaire is closed. To collect the feedback of the respondents in a more convenient and low-cost manner, the final questionnaire was prepared as an e-mail question and was made available to the respondents using information and Internet networks. In this study, content validity was also used for the validity of the formal narration. The results indicated the content validity. To be sustainable, Cronbach's alpha was used. Cronbach's alpha value is 0.86 which shows its reliability.

3.1 Fuzzy Delphi method

Undoubtedly, the wisdom of making decisions can lead to a more thorough and comprehensive decision. To create a consensus, there are several methods, such as electronic meetings, intellectual precipitation, asthmatic groups, and Delphi methods. In the Delphi technique, experts and individuals who are used in opinion don't know each other. Anonymity ensured overcoming the obstacles of the thinking group [22]. Delphi technique defines a method for structuring a group communication process, such that this process allows a group of individuals, as a whole, to solve a complex problem [19]. The main goal of the Delphi method is to reach the most reliable consensus of the experts' opinions via a series of focused questionnaires with controlled feedback [5]. There is no agreement for the number of Delphi technique experts to be several. However, in most studies, 5 to 10 people, or 6 to 12, are recommended [11]. In this research, a group of 32 people was selected using purposeful sampling and snowball sampling to confirm the components.

4 Analyze data

The indicators extracted from studies, research, theoretical resources and the indicators added by professors and experts in the first step were all evaluated by a questionnaire to receive the experts' opinions. Experts were asked to score very little, low, medium, high and very high in a five-option interval (to any of the indicators). After receiving the experts' opinions on two consecutive rounds and converting their thoughts to fuzzy numbers (according to table number one) and their non-linear analysis using the fuzzy Delphi technique, the final model was determined.

Table 1: Language Expressions and Fuzzy Delphi Numbers

| Linguistic expression | Very low | Low | Medium | High | Very high |
|--------------------------|------------|--------------|-----------------|--------------|------------|
| Triangular fuzzy numbers | (0,0,0.25) | (0,0.25,0.5) | (0.25,0.5,0.75) | (0.5,0.75,1) | (0.75,1,1) |

Trigonometric fuzzy numbers are defined as follows:

$$\mu_{\tilde{F}}(x) = \begin{cases} 0, & x < a \\ \frac{x-a}{b-a}, & a \leq x \leq b \\ \frac{c-x}{c-b}, & b \leq x \leq c \\ 0, & x \geq c \end{cases}$$

In non-linear analysis, experts' opinion is first given to triangular fuzzy numbers, and then using the center of gravity method, the diphasic operation of numbers is done. Finally, the components on which there is a consensus of opinion are determined. In this research, in order to implement the fuzzy Delphi technique, the following steps have been taken in order [4].

First step:

In this step, the rating is done by experts, based on Trapezoidal fuzzy numbers, 3 fuzzy numbers are given to each of the ratings and points, which is Pessimistic rating $a_1^{(i)}, a_2^{(i)}, a_3^{(i)}$ the most plausible time. In this case and according to the above statements, the set of triangular fuzzy numbers for each expert is as follows:

$$\tilde{A}^{(i)} = (a_1^{(i)}, a_2^{(i)}, a_3^{(i)}, a_4^{(i)}), \quad i = 1, 2, \dots, n$$

Second step:

First, the average of the sets $\tilde{A}_m^{(i)}$ is calculated from all the sets $\tilde{A}^{(i)}$, which requires the averaging of $a_1^{(i)}, a_2^{(i)}$ and $a_3^{(i)}$. Means:

$$\tilde{A}_m = (a_{m1}, a_{m2}, a_{m3}, a_{m4}) = \left(\frac{1}{n} \sum_{i=1}^n a_1^{(i)}, \frac{1}{n} \sum_{i=1}^n a_2^{(i)}, \frac{1}{n} \sum_{i=1}^n a_3^{(i)} \right)$$

Then, for each expert, the amount of difference from the average is calculated by the following relationship and sent to that expert for review:

$$(a_{m1} - a_1^{(i)}, a_{m2} - a_2^{(i)}, a_{m3} - a_3^{(i)}) = \left(\frac{1}{n} \sum_{i=1}^n a_1^{(i)} - a_1^{(i)}, \frac{1}{n} \sum_{i=1}^n a_2^{(i)} - a_2^{(i)}, \frac{1}{n} \sum_{i=1}^n a_3^{(i)} - a_3^{(i)} \right)$$

Third step:

In this step, after the initial feedback was given to the experts and the second step of Delphi was done, the experts express their modified opinion in the form of triangular fuzzy numbers as follows:

$$\tilde{B}^{(i)} = (b_1^{(i)}, b_2^{(i)}, b_3^{(i)}), \quad i = 1, 2, \dots, n$$

Then, the second step of the process is repeated again and the average of modified comments \tilde{B}_m is calculated according to the following equation.

$$\tilde{B}_m = (b_{m1}, b_{m2}, b_{m3}) = \left(\frac{1}{n} \sum_{i=1}^n b_1^{(i)}, \frac{1}{n} \sum_{i=1}^n b_2^{(i)}, \frac{1}{n} \sum_{i=1}^n b_3^{(i)} \right)$$

Also, the difference values from the average are calculated from the following equation:

$$(b_{m1} - b_1^{(i)}, b_{m2} - b_2^{(i)}, b_{m3} - b_3^{(i)}) = \left(\frac{1}{n} \sum_{i=1}^n b_1^{(i)} - b_1^{(i)}, \frac{1}{n} \sum_{i=1}^n b_2^{(i)} - b_2^{(i)}, \frac{1}{n} \sum_{i=1}^n b_3^{(i)} - b_3^{(i)} \right)$$

This grouping and repetition of times goes until the difference of opinion between two successive stages is smaller or equal to 0.1. With this account, if we call set B a set, the following relationship expresses this issue:

$$S(A_{m1}.A_{m2}) = \left| \frac{1}{3}(a_{m21} + a_{m22} + a_{m23}) - (a_{m11} + a_{m12} + a_{m13}) \right| \leq 0.1.$$

Center of gravity method is used to convert triangular fuzzy numbers into definite numbers. De-fuzzification of the center of gravity is done as follows.

$$\begin{aligned} x_m^1 &= \frac{l + m + u}{3} \\ x_m^2 &= \frac{l + 2m + u}{4} \\ x_m^3 &= \frac{l + 4m + u}{6} \\ \text{crisp number} &= z^* = \max(x_{\max}^1 \cdot x_{\max}^2 \cdot x_{\max}^3) \end{aligned}$$

The results of data analysis in two consecutive rounds are presented in table 2.

Table 2: First and second round results and their differences

| Guiding principles | | | | Content elements | | | |
|--------------------|-------------|--------------|-----------------------------------|------------------|-------------|--------------|-----------------------------------|
| Component | First round | Second round | The difference between two rounds | Component | First round | Second round | The difference between two rounds |
| GP1 | 0.823 | 0.814 | 0.009 | CE1 | 0.835 | 0.829 | 0.006 |
| GP2 | 0.792 | 0.789 | 0.003 | CE2 | 0.810 | 0.803 | 0.007 |
| GP3 | 0.819 | 0.819 | 0.000 | CE3 | 0.812 | 0.809 | 0.003 |
| GP4 | 0.801 | 0.800 | 0.002 | CE4 | 0.814 | 0.810 | 0.004 |
| GP5 | 0.806 | 0.800 | 0.005 | CE5 | 0.821 | 0.816 | 0.005 |
| GP6 | 0.838 | 0.832 | 0.006 | CE6 | 0.818 | 0.818 | - |
| GP7 | 0.826 | 0.817 | 0.009 | CE7 | 0.837 | 0.833 | 0.003 |
| | | | | CE8 | 0.842 | 0.838 | 0.003 |

5 Discussion and conclusion

After the non-linear analysis of the data using the Delphi technique and fuzzy logic, a pattern was determined as follows.

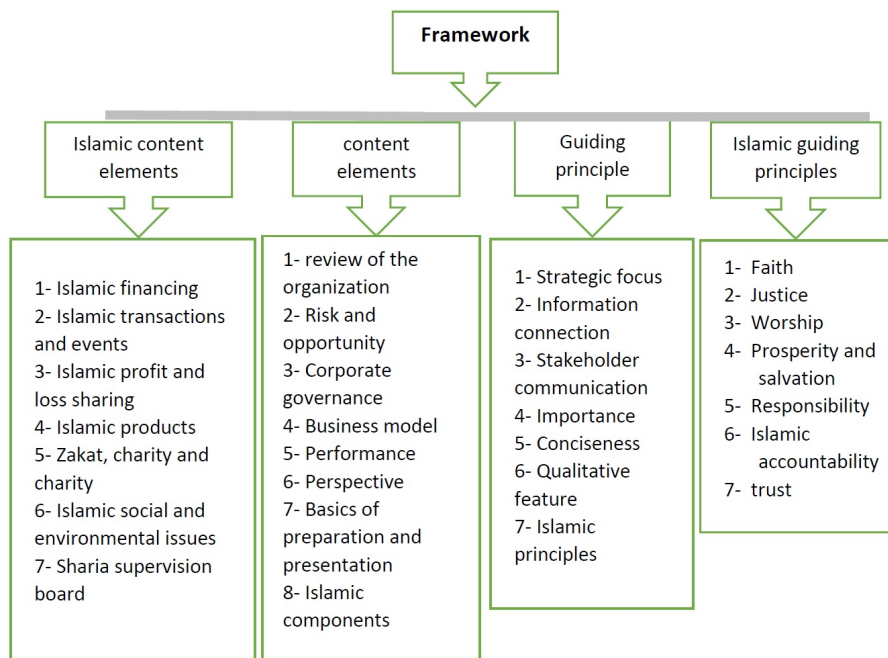


Figure 1: The model for an integrated reporting framework with an Islamic approach

After nonlinear analysis of data using the Delphi technique and fuzzy logic, a pattern was determined as follows. The results showed 7 Islamic principles as guiding principles governing the integrated Islamic report. The principle of responsibility in Islam encourages organizations to act in the interests of society in their daily activities. Organizations based on faith and responsibility that make trusteeship and responsiveness to trust should disclose complete information. It is a form of worship that is an exact representation. The concept of full disclosure ensures that all information required by stakeholders is provided to help them in making decisions. In this situation, the behavior of organizations and companies must be based on the principle of responsibility, accountability and justice. The information revealed about the activities of companies and their impact on society in general must be accurate, complete, reliable and free of bias. Full disclosure of information is a form of worship that can help in salvation in this world and the hereafter.

In addition to Islamic principles, components were also approved by experts, which should be revealed as a part of the Integrated Islamic Information Report (IIC). The Islamic Integrated Report should provide appropriate information on how to supply resources, agreements, products and services, and their results and consequences, such that it can show that the principles and values of Islamic Sharia are upheld by the organization. The organization has attempted to disclose illegal religious events. The Integrated Islamic Report should disclose the policies and activities of organizations regarding charity, social and environmental matters, and all information regarding zakat should also be disclosed by the organizations. Issues such as asset valuation, debt, how to calculate zakat, rates, quorum, and the period of

payment.

One of the cases against which the experts are in consensus is the presence of a Sharia monitoring board in the organization. Organizations must disclose information about the Legal Oversight Board. The Board of Religious Supervision shall also confirm that Islamic principles and values are observed in all activities of the organization. This affirmation is a kind of confirmation of the activities of the organization in terms of legal matters.

The lack of an integrated Islamic report in Iran prevents the testing of this model in Iran. It is suggested that the researchers will investigate the amount of attention of Iranian companies to the Integrated Report and to observe Islamic principles and values.

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