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Research Article

Identifying and Ranking the Factors Influencing the Performance of Human Resources in Mostazafan Foundation Using Fuzzy Delphi-AHP and BSC Methods

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The presented study evaluates the performance with the balanced scorecard approach and fuzzy Delphi in the Mostazafan Foundation. The main goal of the present study is to consider the most important key indicators of human resource performance for designing a business dashboard based on multi-criteria decision-making in the Mostazafan Foundation. For this, the main contributions of the article are (1) identifying the main effective human resource performance indicators using the Delphi method and (2) presenting an integration framework using multi-criteria decision-making according to the determined indicators. The target population of the study was the senior and middle managers of the Mostazafan Foundation. The questionnaire was completed by 30 experts and Cronbach's coefficient for the questionnaire was calculated to be 0.87. Finally, after using the fuzzy Delphi method, the key indicators for evaluating the performance of the Mostazafan Foundation were obtained and ranked using AHP. The results show the ranking of indicators from the financial perspective: the organization's profit per employee (per capita profit), the organization's income per employee (per capita income), and the cost of compensation for total services per employee; from the customer's point of view: the level of commitment and belonging of employees to the organization; the client's complaint rate and employees' perceptions of using their capabilities in the organization; in terms of internal processes: agility in hiring the right staff, key employees by market standards; and in terms of growth and learning, the percentage of key employees with a development plan, the rate of staff with a coach, and the rate of trained staff.

1. Introduction

Today, many organizations use various tools to measure their performance [1] to stay competitive in their business environment [2]. The indicators that the leaders of the organization have always considered are financial indicators. However, the changing business environment has led organizations to use new performance indicators to be ahead of their competitors in the sea of competition [3]. On the other hand, one of the competitive advantages in organizations is human resources [4]. The management of the human resources unit is considered the main structure of an organization to coordinate the people of the organization to achieve the goals and business strategies set in the organization [5]. From the perspective of management, human resources are the most valuable unique assets of organizations. For this purpose, human resource management pays more attention to people, processes, and technologies within the organization rather than to the external environment. This unit is a pioneer in communicating with people [6]. In this regard, it intends to find ways to improve the performance of the organization. Human resource professionals have responsibilities such as communication management, motivation, and leadership of the organization. In this direction, human resource professionals focus on statistical, computational, quantitative, and strategic aspects of systematic human resource management [7]. Therefore, continuous improvement of organizational

performance leads to greater organizational coordination [8]. This coordination can support the growth and development program and create opportunities for organizational excellence [9]. Without reviewing and becoming aware of the progress and achievement of goals, and without identifying the organization's challenges and obtaining information about the implementation of policies, continuous performance improvement will not be possible. All of the above is not possible without measurement and evaluation, so performance appraisal issues can be viewed from different angles [10].

The modern perspective aims at training, growth, and development of evaluated capacities, improving individuals' and organizations' performance, providing consulting services and public participation of stakeholders, and creating motivation and responsibility for improving the quality and optimization of activities and operations [11]. Its basis is to identify the strengths and weaknesses of organizational excellence. The origin of this view is contemporary requirements and develops into a systematic evaluation of performance using modern techniques and methods [12]. The area covered by performance measurement can be the macro level of an organization, a unit, a process, and staff [13]. If the level of performance appraisal includes only individuals, as is common in human resource management, it is done with different criteria in organizations. Although seemingly doing the work, the organization, the individuals, or the organizational unit are only a part of the whole system, and the conditions of other components must also be considered [14]. Paying attention to the organization's all-inclusive criteria and strategies, and aspirations are one of the components of a comprehensive performance management system. Such an approach to performance appraisal will be realistic, equitable, reliable, progressive, and dynamic [15].

The main objective of the present study is, considering the importance of this issue, we seek to find out the most important key indicators of human resource performance for designing a business dashboard based on multi-criteria decision-making in the Mostazafan Foundation. Therefore the main contribution of the article is as follows [16]:

(i) Identifying main effective human resource performance indicators using the Delphi method

(ii) Presenting an integration framework using multi-criteria decision-making according to the determined indicators

The remaining of the article is organized as follows: Section 2 presents literature review and research gap. Section 2 presents problem statement and solution approach. Section 3 presents the main findings of the article and finally, Section 4 presents an overall conclusion and further research for future study.

2. Literature Review

2.1. Review. This section reviewed previous work related to the main subject of this research. For example, Dincer and Hacioglu [17] point out that service companies need to be in a dynamic structure to compete in the business environment. A dynamic structure creates skilled employees and talented managers who work together to develop effective strategies for global competition. The purpose of this study is to investigate the results of banking performance in Turkey based on the level of customer service and satisfaction in services provided using the fuzzy VIKOR approach and hierarchical analysis process method that analyzes the performance of the Bank of Turkey. In order to obtain data dynamics, customer satisfaction competency has been identified as reference point for experts. Findings such as experimental results confirm that the performance results are from different banks in terms of customer satisfaction and types of ownership. The straightforward basic conclusion is about the appropriate facilities of state-owned banks as opposed to private banks. To this end, effective customer service in the performance appraisal process has a strategic role in adopting appropriate competitive strategies. In this research, fuzzy data has been used to analyze the results. Linden [7] states in his research that the business process management system is often focused on controlling flow management. According to resource management, language modeling is mainly based on human resource allocation. At runtime, resource allocation is at the management level. To meet the need for more capabilities in global resource management, this study refers to the integration of interactive dashboards in a resource-aware business process management platform. Together with the appropriate methodology, this framework provides macro perspectives on the right job to increase decision support on human and non-human resource management. Ming et al. [18] presented a new method for evaluating performance and solving complex fuzzy multi-criteria decision-making problems based on a combination of VIKOR and sets of fuzzy numbers with interval values. The problem of performance appraisal often arises in complex implementation processes in which multiple evaluation criteria, theoretical/objective evaluations, and fuzzy conditions must be considered and managed simultaneously. This article forms theoretical, inaccurate, and uncertain processes with the help of linguistic terms in the form of fuzzy numbers, because fuzzy theory can be a suitable tool for working with such uncertain cases. However, presenting linguistic terms in the form of ordinary fuzzy series is not clear enough. Fuzzy number sets with interval values have more flexibility and can better represent the generated vague and ambiguous results and be a more accurate model. This article discusses fuzzy numbers with VIKOR interval values, [19] the purpose of which is to solve multi-criteria decision-making problems. Also, the weight and implementation of various criteria using the concepts of sets of fuzzy numbers have equal interval values. In order to prove the effectiveness of this research method, it has been used to evaluate the performance of the three main intercity bus companies that use the intercity public transportation system. Mohammad and Somayeh [20] have studied the role of balanced scorecard in evaluating the performance of managers of higher education institutions in Bushehr. The performance of higher education institution managers was examined from four aspects of

financial indicators, customer retention, internal processes, and the process of growth and learning. The research method was a descriptive survey. Their statistical population was 136 deputies and managers of higher education departments, of which 115 species were randomly selected as a sample in this study. The obtained data were analyzed using SPSS software and statistical method of mean and ANOVA by balanced scorecard. Reference [21] dealt with the impact of implementing a human resource information system on human resource managers' decision-making through the use of business intelligence tools, such as reports, analysis, dashboards, and benchmarks or actions they have paid. In this study, a quantitative methodological approach was conducted based on the results of a survey of 43 CEOs and human resource managers, data analysis methods, correlation coefficient, and regression analysis using SPSS software. The findings of this study provide significant insights into the subject, which show that the information collected by business intelligence tools from the human resources system influences human resource managers' decision-making and the organization's performance. Reference [22], in their research, identified the key indicators that should be used in production dashboards. They also identified other types of indicators. They acknowledged that the dashboard design was different from other display systems. Reference [23] research is to determine whether there is a difference in the field of human resources between domestic and foreign companies in South Africa because companies from developed countries are more successful in this field. Survey responses were collected from 61 domestic companies and 57 foreign companies with more than 200 employees. From the findings, it seems that foreign companies are more involved in having a written mission statement, business strategy, and human resource management, which leads to improved performance in employees and reduced operating costs for such companies compared with local companies. Sirous and Soltanzadeh [10], in their research, presented a quantitative model for evaluating system performance. Their model identifies factors affecting performance and the relationship between them and measures performance by considering relevant factors and a hierarchical analysis process. However, this model has limitations concerning measuring instruments. Irajpour et al. [24] identified and prioritized organizational performance evaluation indicators based on sustainable balanced scorecard methods. Therefore, first, a list of related indicators was extracted using a review of the existing literature and then reviewed by the experts of this company, and the final model was proposed. The results indicate that the flow of liquidity is the priority and the order of air pollution and increasing workforce skills are the following priorities. The proposed model shows that performance indicators can be integrated with different dimensions of stable balanced scorecard using the fuzzy ANP technique. Nekoei Moghadam et al. [25] designed a human resources dashboard. The fuzzy Delphi method and then a mathematical model based on ANFIS (adaptive neural fuzzy inference system) have been used to modify the conceptual model and elements. The statistical sample is the human resources staff of SEPAH Bank, and 132 staff members were selected with Cochran's formula for the classified questionnaire. The questionnaire consisted of 61 questions based on the indicators of the customer and financial perspectives. In the customer model, growth and learning with 0.40 progress have a positive effect on output; the internal process with 0.60 progress shows a positive impact on the output. In the financial model, growth and learning have a negative impact on output with a decrease of 0.29; the internal process shows a negative impact on output with a decrease of 0.14. The results show that the performance for the first output (customer) is 38.80 and for the second output (financial) is 39.00 (in the range of 0–100). The numbers that indicate performance are 50 for the first element and 50 for the second element. Reference [26] stated in their research that today the data sources of multiple companies are large and complex. For this reason, the problem in these organizations is the collection of data that makes it sound at the right time and for the right person whose value is being exploited. To this end, there is a need to analyze the data to provide an overview of the data from the company's raw information, operational, and useful information to help monitor the project and make decisions. In this research, a combination of three business process modules (multiple actors and data sources) has presented a suitable method to support decision-making processes using information technology. The primary purpose of this study is to extract key performance indicators from different data sources and use business techniques, including data visualization techniques and a management dashboard. Moons et al. [27] presented a rigorously defined logistics performance measurement framework to evaluate the efficiency of logistics processes in operating rooms. The analytic network process (ANP) is utilized as a popular multi-criteria decision-making (MCDM) technique to provide effective decision-support models. Modak et al. [28] presented A BSC-ANP approach to organizational outsourcing decision support in the real-world application. In this article, BSC considers elements of decision-making for organizational performance evaluation. Findings show that the proposed approach can help in determining the best outsourcing strategy for an organization. Yang and Lee [29] developed a map strategy for forensic accounting with fraud risk management. For this, consider an integrated balanced scorecard-based decision model. BSC considers elements of decision-making for forensic accounting (FA) measurement. DEMATEL-ANP captures the interrelations in a strategy map for fraud risk management. Finally, the priority significant indicators to promote fraud risk management are selected. Also, a decision model is developed to provide information for FA technology implementation. Abedian et al. [30] determined the best combination of perspective indicators of the balanced scorecard by using game theory. In this article, a mathematical model was employed to determine the equilibrium among the four perspectives of the balanced scorecard (BSC) as four players in a cooperative game to specify the relationship among indicators in the strategy map of Esfahan Steel Complex Company. Huynh et al. [31] created a strategic performance management model for enterprises investing in coastal urban projects

toward sustainability. For this, in the article, a strategic management tool was developed by integrating the balanced scorecard (BSC), analytic network process (ANP), and decision-making trial and evaluation laboratory (DEMATEL) methods. Nour et al. [32] verified the impact of applying a balanced scorecard on earnings quality controlled by the Firm (Bank) size of banks listed on the Palestine Exchange during the 2011–2019 period. To achieve this objective, a panel model relating to the dependent variable (earnings quality) and independent variables (balanced scorecard components) with the control variable (Firm size) was estimated. The results showed a statistically [33] significant negative effect of customer perspective (CUS) on earnings quality (EQ); a statistically significant positive effect of internal business process perspective (IBP) on earnings quality (EQ); and a statistically significant positive effect of Firm size (FS) on earnings quality (EQ). Mohammed et al. [34] studied the impact of the management accounting system (MAS) on the circular economy by adopting the agile-adaptive balanced scorecard (AABSC) as a mediating factor for this relationship. The purpose of this study is to recommend the problems of the circular economy represented in waste of resources and air pollution, in addition to innovation, customer satisfaction, and internal operations problems. A dual approach was applied which are structured equation model (PLS-SEM) and artificial neural network (ANN) approach.

2.2. Research Gap. According to the above-mentioned studies, previous research has mostly used prioritization for predetermined indicators. Based on the acquired knowledge, for implementation in an organization, extraction of the index has been done less among experts, because the use of predetermined indicators may not have coordinated with the organization. To overcome this problem, in this research, first, indicators are identified using the Delphi method, then they are prioritized using decision-making methods. In Table 1, previous research literature is categorized.

3. Problem Statement

3.1. Picture of Problem Statement. The study population consisted of experts from senior and middle managers and human resources specialists of the Mostazafan Foundation. According to the required characteristics of experts, including a master's degree or higher or a bachelor's degree with more than 15 years of experience in the Foundation for the Underprivileged, familiar with the balanced scorecard, strategy concepts, and sufficient knowledge of the conditions of the Mostazafan Foundation and its strategies; aware of evaluating organizational performance and key performance indicators; aware of human resource management knowledge; 30 people with this features were identified as a panel of experts. To prepare the literature in the present study, we used library studies including books, articles, journals, research reports, and existing documents. Also, we used the Internet and collected data from a closed questionnaire with a standard scale (validity and reliability). To send and collect data, we applied direct references. In general, in collecting information in the stage of identifying the indicators, three methods such as documentary, Delphi, and survey studies, have been used, and there is a kind of trinity.

In order to collect information, prepare a theoretical framework, study the thoughts and intellectual developments, and different perspectives, the documentary method has been used and referring to all available sources and references. In most multi-criteria decision-making issues, indicators must first be collected and identified. After the initial identification of indicators, using the fuzzy Delphi method and Delphi steps, until the threshold and the collective agreement of experts, the indicators were approved. Experts expressed their agreement through verbal variables such as strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree. In Figure 1, conceptual model of the research is depicted.

To implement the proposed framework, the key indicators of the balanced scorecard dimensions are first determined using regular Delphi meetings with experts. Then, for the second round of Delphi, confidential meetings were held with each of the experts to determine the most important indicators for evaluation [20]. Finally, by determining the indicators, their ranking is done using the AHP.

3.2. Solution Approach

3.2.1. Balanced Scorecard (BSC). A balanced scorecard is a strategy performance management tool, a well-structured report, that can be used by managers to keep track of the execution of activities by the staff within their control and to monitor the consequences arising from these actions [20]. The phrase "balanced scorecard" primarily refers to a performance management report used by a management team, and typically this team is focused on managing the implementation of a strategy or operational activities—in a 2020 survey 88% of respondents reported using balanced scorecard for strategy implementation management, 63% for operational management. Balanced scorecard is also used by individuals to track personal performance, but this is uncommon—only 17% of respondents in the survey use balanced scorecard in this way, however, it is clear from the same survey that a larger proportion (about 30%) use corporate balanced scorecard elements to inform personal goal setting and incentive calculations. The critical characteristics that define a balanced scorecard are [1] as follows:

(i) Its focus on the strategic agenda of the organization/coalition concerned

(ii) A focused set of measurements to monitor performance against objectives

(iii) A mix of financial and nonfinancial data items (originally divided into four "perspectives" as Financial, Customer, Internal Process, and Learning and Growth)

(iv) A portfolio of initiatives designed to impact performance of the measures/objectives

Table 1: Literature categorized.

Author	Solution approach								Set type		Case study
	VIKOR	AHP	BSC	ANP	DEMATEL	GT[1]	ANN	SEM	Certain	Uncertain	
Dincer and Hacioglu [17]	*	*							*		*
Ming et al. [18]	*									*	*
Sirous and Soltanzadeh [20]			*						*		*
Irajpour et al. [24]			*	*					*		*
Moons et al. [27]				*					*		*
Modak et al. [28]			*	*					*		*
Yang and Lee et al. [34]				*	*				*		*
Abedi et al. [1]			*			*			*		*
Mohammed et al. [33]							*	*	*		
In this research		*	*							*	*

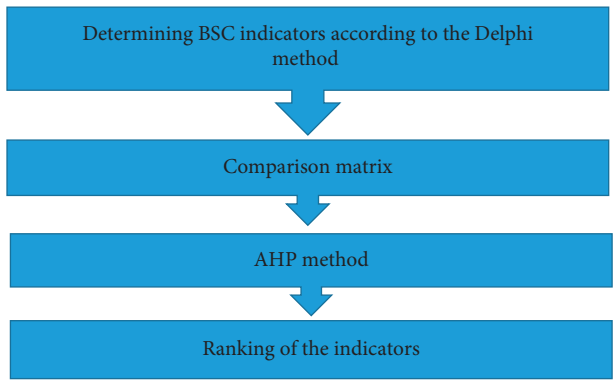

Figure 1: Conceptual model.

Balanced scorecard was initially proposed as a general-purpose performance management system. Subsequently, it was promoted specifically as an approach to strategic performance management. Balanced scorecard has more recently become a key component of structured approaches to corporate strategic management. Two of the ideas that underpin modern balanced scorecard designs concern making it easier to select which data to observe, and ensuring that the choice of data is consistent with the ability of the observer to intervene [27].

3.2.2. Fuzzy Delphi Method. The Delphi method is named after a Greek oracle who had the ability to predict the future. As a research methodology, it was first developed and described in the 1950s with the goal of forecasting and building consensus among a panel of national defense experts who were asked to identify targets in the United States that might be bombed during the Cold War [36]. Researchers needed an alternative to the shortcomings of traditional forecasting methods, such as quantitative modeling and trend extrapolation. Over the past 60 years, the method has been widely applied in business, economics, public policy, and other fields that rely on projections and expert opinions [37].

There is considerable variability in Delphi designs, and many authors fail to fully describe or provide a rationale for their methods. As described in detail below, Delphi designers should be prepared to defend their methodological steps (i.e. processes for protocol development, defining panelists, measuring consensus, and reporting results). Furthermore, methodological decisions should align with any resulting claims. If the Delphi is intended to generate "generalizable knowledge" for consumption by a wide audience, researchers should adopt high levels of rigor and be clear in the reporting of their methodology; however, when used for local consensus building purposes, certain shortcuts might be reasonable [38].

3.2.3. Analytic Hierarchy Process (AHP). Analytic hierarchy process (AHP) is a well-known multi-criteria decision-making (MCDM) method in industries [39]. AHP is based on pairwise comparisons of alternatives and factors [14]. In this article, the weights of the alternatives and then their rank are determined using the AHP method. The steps of the AHP method are described as follows:

(i) Step 1: pairwise comparison matrix

According to the experts' opinions building a pairwise comparison matrix, for alternatives.

$$D_{n\times m} = \begin{bmatrix} d_{11} & \cdots & d_{1n} \\ \vdots & \ddots & \vdots \\ d_{n1} & \cdots & d_{nm} \end{bmatrix}. \quad (1)$$

(ii) Step 2: normalized pairwise comparison matrix (**N**)

It is calculated by equation (9).

$$N = \begin{bmatrix} d'_{11} & \cdots & d'_{1n} \\ \vdots & \ddots & \vdots \\ d'_{n1} & \cdots & d'_{nn} \end{bmatrix}, d'_{ij} = \frac{1}{\sum_{i=1}^{j} d_{ij}}. \quad (2)$$

(iii) Step 3: computation of the factor weights.

$$V = \begin{bmatrix} v_1 \\ \vdots \\ v_n \end{bmatrix},$$

$$V_j = \frac{\sum_{i=1}^{n} d'_{ji}}{n}, \quad (3)$$

$$V' = NV = \begin{bmatrix} v'_1 \\ \vdots \\ v'_2 \end{bmatrix}.$$

N is the matrix order and V' is the factor weight matrix.

Also, in this study, for AHP considered, a questionnaire was prepared and distributed among experts after identifying the indicators with the Delphi method. The questionnaires are in the form of pairwise comparisons, which are in several levels and according to their higher level, and the experts show the importance of each index with each other in pairs and with numbers between 1 and 9. After that, each index's weighting and the weight of each index were obtained using the analytic hierarchical process.

4. Results

According to the identification of key indicators of human resource performance in four perspectives of the balanced scorecard, we used the approach of analytic hierarchical process and prioritized the key indicators of human resource performance based on the balanced scorecard approach in the Mostazafan Foundation. For this purpose, a pairwise comparison questionnaire was prepared and sent to 30 experts. In the following, we presented the results in each of these scenes.

4.1. Financial View. In this perspective, four criteria of the organization's income per employee (per capita income), the organization's profit per employee (per capita profit), the cost of compensation for total services per employee, and per capita welfare costs are considered. According to the analytic hierarchical process, the relevant criteria were ranked, which are described in Tables 1–3.

In Table 1, we consider the sum of each column and divide each element by it, which is called normalizing the column of the matrix. The results are shown in Table 2.

By normalizing the row of results in Table 3, the weight of each criterion in Table 4 is obtained.

The prioritization of financial perspective indicators is shown in Figure 2.

Based on Table 4 and Figure 2, the priority of key indicators of human resource performance to evaluate the performance of the Mostazafan Foundation in financial view was determined as follows:

(1) Profit of the organization for each employee (per capita profit): 63%

(2) Organization income per employee (per capita income): 22%

(3) Compensation cost of total services for each employee: 8%

(4) Per capita welfare expenditure: 6%

4.2. Customer View. In this perspective, three criteria are considered: the degree of commitment of employees to the organization, employees' perception of using their capabilities in the organization, and the client's complaint rate. According to the analytic hierarchical process, the relevant criteria were ranked. Tables 5–7 are described.

In Table 5, we divide each operation by the sum of the column numbers and normalize the column and the results are provided in Table 6.

By normalizing the row of results in Table 6 and performing the relevant calculations, the final weights of each index were determined and given in Table 7.

The prioritization of customer perspective indicators is shown in Figure 3.

Based on Table 6 and Figure 3, the priority of key performance indicators of human resources to evaluate the performance of the Mostazafan Foundation in the customer perspective were identified as follows:

(1) Employee commitment to the organization: 66%

(2) Employees' perception of using their capabilities in the organization: 65%

(3) Customer complaint rate: 23%

4.3. Internal Processes View. In this perspective, eight criteria were examined, which were: duration of the recruitment process, key staff turnover rate, staff turnover rate, number of HR staff to total employees, number of operational plans implemented to total plans extracted from Human resource strategies, the percentage of adaptation of new employees, agility in hiring qualified personnel, and the distance of compensation for services to market standards.

According to the hierarchical analysis process, the relevant criteria were ranked, which are described in Tables 8–10.

Table 2: Basic table of analytic hierarchical process in financial perspective.

	Per income	Per profit	Per capita welfare costs	Service reimbursement fee
Per income	1	0.2	7	2
Per profit	5	1	9	6
Per capita welfare costs	0.14	0.11	1	1
Service reimbursement fee	0.5	0.16	1	1

Table 3: Normalization table of analytic hierarchical process in financial perspective.

	Per income	Per profit	Per capita welfare costs	Service reimbursement fee
Per income	0.15	0.14	0.39	0.2
Per profit	0.75	0.68	0.5	0.6
Per capita welfare costs	0.02	0.07	0.06	0.1
Service reimbursement fee	0.08	0.11	0.06	0.1

Table 4: Weight of criteria in financial view.

Per income	Per profit	Per capita welfare costs	Service reimbursement fee
0.219	0.633	0.063	0.085

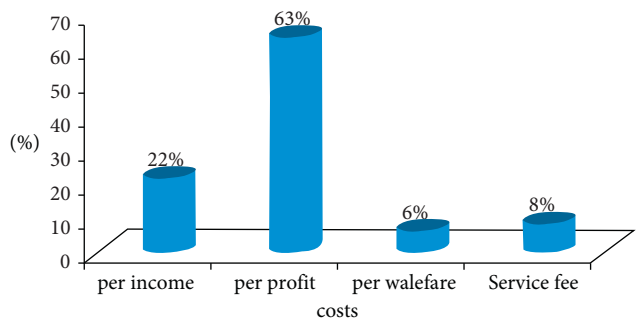

Figure 2: Weight of criteria from financial perspective.

In Table 8, we divide each component by the sum of the column numbers and normalize the column and the results are provided in Table 9.

By normalizing the row of results in Table 9 and performing the relevant calculations, the final weights of each index were determined and given in Table 10.

Prioritization of perspective indicators of internal processes is shown in Figure 4.

Based on Table 10 and Figure 4, the priority of key indicators of human resource performance to evaluate the performance of the Mostazafan Foundation in terms of internal processes was identified as follows:

(1) Agility in hiring qualified personnel 19%

(2) Key employee dismissal rate 18%

(3) Service compensation gap with market standards 17%

(4) Adaptation rate of new employees 15%

(5) Recruitment process time 11%

(6) Number of employees of human resources unit to total employees of the organization 10%

(7) Employee leave rate 6%

(8) Number of operational plans implemented to the total plans extracted from human resource strategies 55%

4.4. Growth and Learning View. In this perspective, the criteria were the attainment of managerial positions (middle managers) by the current employees of the company, the percentage of planned horizontal promotion, the time required to qualify for promotion, the effectiveness of training, per capita training (training hours), trained staff rate, staff rate with a coach, managers who have completed the performance management course, the percentage of key employees with a development plan, and the percentage of development programs implemented, which is given in Table 11 of the experts' opinions according to the results.

In Table 11, we divide each operation by the sum of the column numbers and normalize the column and the results are presented in Table 12.

By normalizing the row of results in Table 12 and performing the relevant calculations, the final weights of each index were determined and given in Table 13.

Table 5: Matrix of pairwise comparisons of criteria in the customer perspective.

	Client complaint rate	Employee commitment and belonging	Employee perception to use capability
Client complaint rate	1	0.25	9
Employee commitment and belonging	4	1	9
Employee perception to use capability	0.11	0.11	1

Table 6: Normalization table of analytic hierarchical process in customer perspective.

	Client complaint rate	Employee commitment and belonging	Employee perception to use capability
Client complaint rate	0.20	0.18	0.47
Employee commitment and belonging	0.78	0.74	0.47
Employee perception to use capability	0.02	0.08	0.05

Table 7: Weights obtained from the hierarchical analysis process in the customer perspective.

Employee perception to use capability	Employee commitment and belonging	Client complaint rate
0.65	0.664	0.23

Prioritization of growth and learning view indicators is shown in Figure 5.

Based on Table 13 and Figure 5, the priority of key indicators of human resource performance to evaluate the performance of the Mostazafan Foundation in terms of growth and learning were identified as follows:

(1) Percentage of key employees with 26% development plan
(2) The rate of employees with a coach is 23%
(3) 11% trained staff rate
(4) Effectiveness of training 9%
(5) Time required to qualify for 8% promotion
(6) Percentage of planned horizontal upgrade 6%
(7) Achieving managerial positions (middle managers) by the current employees of the company 5%
(8) Percentage of implemented development programs 5%
(9) Per capita education (person training hours) 4%
(10) Managers who have completed the performance management course 4%

5. Managerial Insights and Practical Implications

The balanced scorecard model or the balanced evaluation model is a method for turning strategy into action, in other words, this model is a method for operationalizing the ideal, mission, and strategies of organizations, and the company's future perspective is the main area of balanced evaluation model investigations. The balanced scorecard did not have a control role and its criteria are not used to describe past performance, but these criteria are a tool to explain the organization's strategy, which enables the achievement of organizational goals by coordinating activities at various levels of the organization. In this research, factors affecting human resources in the Mostazafan Foundation have been investigated in four dimensions. These four dimensions are Financial view, Customer view, Internal process view, and Growth and learning view. In all four dimensions, while determining the key criteria affecting the performance of human resources, the priority of each of them has been determined by the Mostazafan Foundation. According to the results of ranking the indicators, the first three important indicators in each perspective were listed below.

5.1. Financial Perspective

(i) Profit of the organization for each employee (per capita profit)
(ii) Income of the organization per employee (per capita income)
(iii) The cost of total service compensation for each employee

5.2. Customer Perspective

(i) The degree of commitment and belonging of employees to the organization
(ii) Employees' perception of using their capabilities in the organization
(iii) Client complaint rate

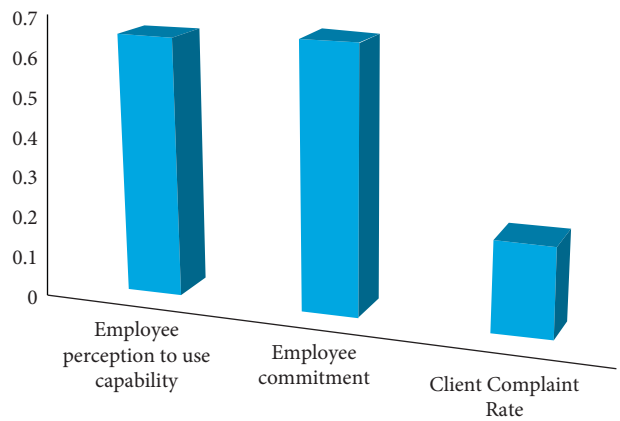

Figure 3: Weight of criteria in the customer perspective.

Table 8: Matrix of pairwise comparisons of criteria in terms of internal processes.

	Duration of the recruitment process	New employee compliance rate	Key staff leave rates	Number of employees of the human resources unit to the total number of employees	Employee leave rate	Service compensation gap with market standards	Agility in hiring the right force	Number of operational plans executed to the total number of programs
Duration of the recruitment process	1	0.2	7	2	7	0.33	0.2	1
New employee compliance rate	5	1	9	6	0.33	0.33	0.2	1
Key staff leave rates	0.14	0.11	1	1	4	7	0.2	9
Number of employees of the human resources unit to the total number of employees	0.5	0.16	1	1	1	0.33	5	1
Employee leave rate	0.14	3	0.25	1	1	0.33	0.2	1
Service compensation gap with market standards	3	3	0.14	3	3	1	3	3
Agility in hiring the right force	5	5	5	0.2	5	0.33	1	5
Number of operational plans executed to the total number of programs	1	1	0.11	1	1	0.33	0.2	1

5.3. Perspectives on Internal Processes

(i) Agility in hiring the right staff
(ii) Drop rate of key employees
(iii) Service compensation gap with market standards

5.4. Perspective of Growth and Learning

(i) Percentage of key employees with a development plan
(ii) Rates of employees with a coach
(iii) Rate of trained staff

Table 9: Normalization table of hierarchical analysis process in terms of internal processes.

	Duration of the recruitment process	New employee compliance rate	Key staff leave rates	Number of employees of the human resources unit to the total number of employees	Employee leave rate	Service compensation gap with market standards	Agility in hiring the right force	Number of operational plans executed to the total number of programs
Duration of the recruitment process	0.06	0.01	0.25	0.13	0.31	0.03	0.02	0.05
New employee compliance rate	0.32	0.07	0.38	0.39	0.01	0.03	0.02	0.05
Key staff leave rates	0.01	0.01	0.04	0.07	0.18	0.7	0.02	0.41
Number of employees of the human resources unit to the total number of employees	0.03	0.01	0.04	0.07	0.04	0.03	0.5	0.05
Employee leave rate	0.01	0.22	0.01	0.07	0.04	0.03	0.02	0.05
Service compensation gap with market standards	0.19	0.22	0.01	0.2	0.13	0.1	0.25	0.14
Agility in hiring the right force	0.32	0.37	0.21	0.01	0.22	0.03	0.1	0.23
Number of operational plans executed to the total number of programs	0.06	0.07	0.00	0.07	0.04	0.03	0.02	0.05

Table 10: Weights obtained from the hierarchical analysis process in terms of internal processes.

Duration of the recruitment process	New employee compliance rate	Key staff leave rates	Number of employees of the human resources unit to the total number of employees	Employee leave rate	Service compensation gap with market standards	Agility in hiring the right force	Number of operational plans executed to the total number of programs
0.115	0.154	0.179	0.097	0.056	0.169	0.187	0.044

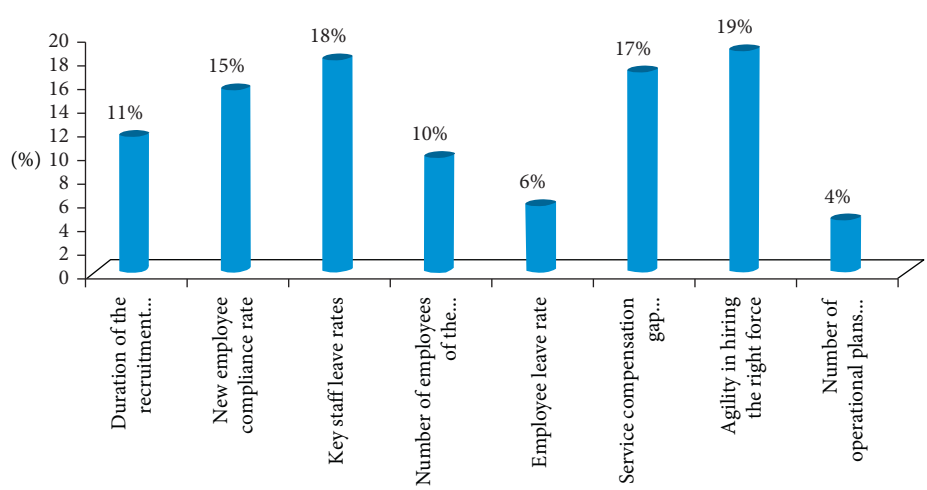

Figure 4: Weight of criteria in terms of internal processes.

Table 11: Matrix of pairwise comparisons of criteria in terms of growth and learning.

Criteria	Percentage of development programs implemented	Time required to qualify	Percentage of planned horizontal upgrades	Acquisition of managerial positions by current employees	Managers who have completed a course in performance management	Rates of trained staff	Percentage of key employees with a development plan	Per capita education	Staff rates with a coach	Training effectiveness
Percentage of development programs implemented	1	1	1	3	1	0.33	0.2	1	0.2	0.33
Time required to qualify	1	1	1	4	1	0.33	0.17	1	0.2	5
Percentage of planned horizontal upgrades	1	1	1	6	1	0.33	0.125	1	0.2	0.33
Acquisition of managerial positions by current employees	0.33	0.25	0.17	1	1	0.33	0.2	1	0.2	4
Managers who have completed a course in performance management	1	1	1	1	1	0.33	0.11	1	0.2	0.33
Rates of trained staff	3	3	3	3	3	1	0.33	3	0.33	1
Percentage of key employees with a development plan	5	6	8	5	9	3	1	5	1	3
Per capita education	1	1	1	1	1	0.33	0.2	1	0.2	0.33
Staff rates with a coach	5	5	5	5	5	3	1	5	1	3
Training effectiveness	3	0.2	3	0.25	3	1	0.33	3	0.33	1

Table 12: Normalization table of hierarchical analysis process in terms of growth and learning.

Criteria	Percentage of development programs implemented	Time required to qualify	Percentage of planned horizontal upgrades	Acquisition of managerial positions by current employees	Managers who have completed a course in performance management	Rates of trained staff	Percentage of key employees with a development plan	Per capita education	Staff rates with a coach	Training effectiveness
Percentage of development programs implemented	0.05	0.05	0.04	0.10	0.04	0.03	0.05	0.05	0.05	0.02
Time required to qualify	0.05	0.05	0.04	0.14	0.04	0.03	0.05	0.05	0.05	0.27
Percentage of planned horizontal upgrades	0.05	0.05	0.04	0.21	0.04	0.03	0.03	0.05	0.05	0.02
Acquisition of managerial positions by current employees	0.02	0.01	0.01	0.03	0.04	0.03	0.05	0.05	0.05	0.22
Managers who have completed a course in performance management	0.05	0.05	0.04	0.03	0.04	0.03	0.03	0.05	0.05	0.02
Rates of trained staff	0.14	0.15	0.12	0.10	0.12	0.10	0.09	0.14	0.09	0.05
Percentage of key employees with a development plan	0.23	0.31	0.33	0.17	0.35	0.25	0.27	0.23	0.26	0.16
Per capita education	0.05	0.05	0.04	0.03	0.04	0.03	0.05	0.05	0.05	0.02
Staff rates with a coach	0.23	0.26	0.21	0.17	0.19	0.25	0.27	0.23	0.26	0.16
Training effectiveness	0.14	0.01	0.12	0.01	0.12	0.10	0.09	0.14	0.09	0.05

Table 13: Weights obtained from the hierarchical analysis process in terms of growth and learning.

Percentage of development programs implemented	Time required to qualify	Percentage of planned horizontal upgrades	Acquisition of managerial positions by current employees	Managers who have completed a course in performance management	Rates of trained staff	Percentage of key employees with a development plan	Per capita education	Staff rates with a coach	Training effectiveness
0.57	0.15	0.14	0.21	0.039	0.73	0.261	0.4	0.229	0.89

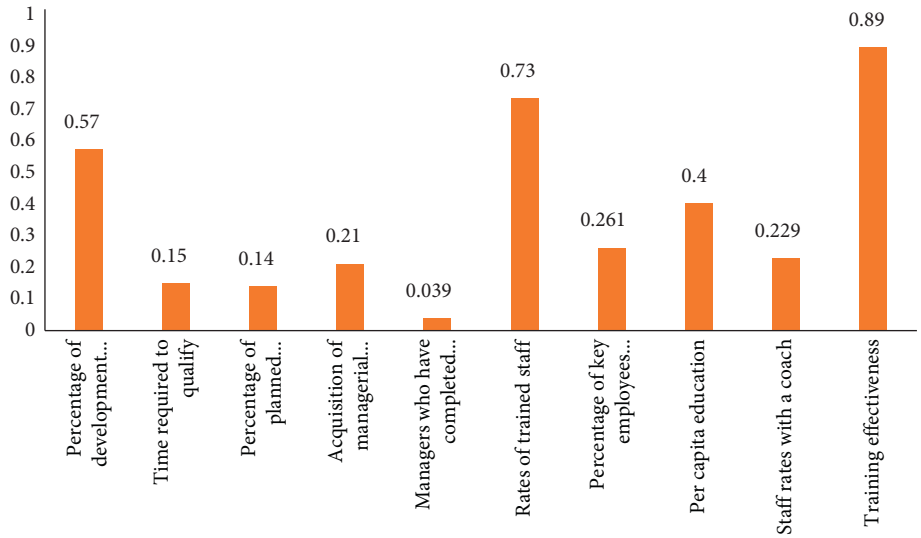

Figure 5: Weight of criteria in terms of growth and learning.

6. Conclusion and Outlook

For this purpose, according to the Analytic Hierarchy Process (AHP), ranking was done in each of the landscapes. According to the results of ranking the indicators, important indicators in each perspective are as follows:

(i) Financial views were determined as follows: (1) profit of the organization for each employee (per capita profit): 63%; (2) organization income per employee (per capita income): 22%; (3) compensation cost of total services for each employee: 8%; and (4) Per capita welfare expenditure: 6%.

(ii) Customer perspectives were identified as follows: (1) employee commitment to the organization: 66%; (2) employees' perception of using their capabilities in the organization: 65%; and (3) Customer complaint rate: 23%.

(iii) Internal processes were identified as follows: (1) agility in hiring qualified personnel: 19%; (2) key employee dismissal rate: 18%; (3) service compensation gap with market standards: 17%; (4) adaptation rate of new employees: 15%; (5) recruitment process time: 11%; (6) number of employees of human resources unit to total employees of the organization: 10%; (7) employee leave rate: 6%; and (8) number of operational plans implemented to the total plans extracted from human resource strategies: 55%.

(iv) Finally, growth and learning were identified as follows: (1) percentage of key employees with 26% development plan; (2) the rate of employees with a coach is 23%; (3) 11% trained staff rate; (4) effectiveness of training 9%; (5) time required to qualify for 8% promotion; (6) percentage of planned horizontal upgrade 6%; (7) achieving managerial positions (middle managers) by the current employees of the company 5%; (8) percentage of implemented development programs 5%; (9) per capita education (person training hours) 4%; and (10) managers who have completed the performance management course 4%.

As it turned out, the "total service reimbursement cost per employee" index has the third priority among financial perspective indicators. This result is in line with decisions related to targeting costs by the organization's senior management. The two indicators of "agility in hiring qualified personnel" and "remuneration gap with market standards" were identified as the most important key indicators of human resource performance in terms of internal processes. This result is in line with the strategic goal of "attracting, retaining, and developing human resources" as one of the two strategic goals of human resources in the Mostazafan Foundation. Also, the index of "key employee leave rate" was among the eight indicators of the perspective of internal processes in the second priority. This result is in

line with the policies of the Mostazafan Foundation regarding "leaving the service of key employees" as one of the strategic indicators of the company. It should be noted that in this article, the issue of social responsibility based on Alvani et al. [6] in the context of sustainable development has been studied, which is not mentioned in this article. Suggestion for further research is that it is possible to assess the impact of the considered factors on human resources by using structural equations model.

Data Availability

The data are collected from the real case and are available in the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] M. Abedi, A. Amindoust, R. Madahi, and J. Jouzdani, "Determining the best perspective indicators of balanced scorecard by using game theory," *Journal of Optimization in Industrial Engineering*, vol. 12, no. 1, pp. 185–194, 2020.

[2] S. Firk, J. C. Hennig, and M. Wolff, "Can the Balanced Scorecard help in designing conference calls? The effect of balanced information composition on the cost of capital," *European Accounting Review*, vol. 29, no. 1, pp. 115–146, 2020.

[3] I. Gabcanova, "Human resources key performance indicators," *Journal of competitiveness*, vol. 4, no. 1, pp. 117–128, 2012.

[4] S. Jahangiri, A. Pourghader Chobar, P. Ghasemi, and M. Abolghasemian, "Simulation-based optimization: analysis of the emergency department resources under COVID-19 conditions," *International Journal of Industrial and Systems Engineering*, vol. 1, no. 1, p. 1, 2021.

[5] I. Hristov, A. Chirico, and A. Appolloni, "Sustainability value creation, survival, and growth of the company: a critical perspective in the Sustainability Balanced Scorecard (SBSC)," *Sustainability*, vol. 11, no. 7, p. 2119, 2019.

[6] S. M. Alvani, N. Mirsapasi, and T. Mojibi, "Development of balanced scorecard model in public sector," *Quarterly Journal of Management*, vol. 5, pp. 1–15, 2005.

[7] I. Linden, "Proposals for the integration of interactive dashboards in business process monitoring to support resources allocation decisions," *Journal of Decision Systems*, vol. 23, no. 3, pp. 318–332, 2014.

[8] S. Jahangiri, A. Pourghader Chobar, P. Ghasemi, M. Abolghasemian, and V. Mottaghi, "Simulation-based optimization: analysis of the emergency department resources under COVID-19 conditions," *International Journal of Industrial and Systems Engineering*, vol. 1, no. 1, pp. 1–10, 2021.

[9] F. Asadia and M. Abolghasemianb, "Review coordination of advertising policy and its effect on competition between retailer and manufacture in the supply chain," *Computational Research Progress in Applied Science and Engineering*, vol. 4, no. 3, pp. 62–66, 2018.

[10] S. Ghanbari and V. Soltanzadeh, "The mediating role of emotional intelligence in the relationship between self-efficacy of research and academic achievement motivation," *Educational Measurement and Evaluation Studies*, vol. 6, no. 14, pp. 41–67, 2016.

[11] M. Abolghasemian and H. Darabi, "Simulation based optimization of haulage system of an open-pit mine: meta modeling approach," *Organizational resources management researchs*, vol. 8, no. 2, pp. 1–17, 2018.

[12] M. Abolghasemian, A. G. Kanai, and M. Daneshmandmehr, "A two-phase simulation-based optimization of hauling system in open-pit mine," *Iranian Journal of Management Studies*, vol. 13, no. 4, pp. 705–732, 2020.

[13] R. Noe, J. Hollenbeck, B. Gerhart, and P. Wright, "Human Resources Management: Gaining a Competitive Advantage," in *10th edition, McGraw-Hill Education*, New York, MA, USA, 2016.

[14] E. Touti and A. P. Chobar, "Utilization of AHP and MCDM integrated methods in urban project management (A case study for eslamshahr-tehran)," *International journal of industrial engineering and operational research*, vol. 2, no. 1, pp. 16–27, 2020.

[15] M. C. Demartini and D. Otley, "Beyond the system vs. package dualism in Performance Management Systems design: a loose coupling approach," *Accounting, Organizations and Society*, vol. 86, p. 101072, 2020.

[16] N. Milani, M. Rabieea, and A. Shahmansouri, "Evaluate the efficiency of the company's employees by using VIKOR and AHP approach in Persian corporate insurance," p. 23, 2016.

[17] H. Dincer and U. Hacioglu, "Performance evaluation with fuzzy VIKOR and AHP method based on customer satisfaction in Turkish banking sector," *Kybernetes*, vol. 42, no. 7, pp. 1072–1085, 2013.

[18] A. B. Ming, W. Zhang, Z. Y. Qin, and F. L. Chu, "Dual-impulse response model for the acoustic emission produced by a spall and the size evaluation in rolling element bearings," *IEEE Transactions on Industrial Electronics*, vol. 62, no. 10, pp. 6606–6615, 2015.

[19] E. Ünal, A. Urbinati, and D. Chiaroni, "Managerial practices for designing circular economy business models," *Journal of Manufacturing Technology Management*, vol. 30, no. 3, pp. 561–589, 2019.

[20] B. Mohammad and S. Somayeh, "The role of balanced scorecard in evaluating the performance of managers," *Quarterly Journal of New Approach in Educational Management*, vol. 7, pp. 262–289, 2015.

[21] I. Dias and M. J. Sousa, "Business Intelligence applied to Human resources management," in *New Contributions in Information Systems and Technologies*, pp. 105–113, Springer, Cham, 2015.

[22] T. Henri, G. Christoph, J. Eeva, and N. Esko, "Designing manufacturing dashboards on the basis of a Key," *CIRP Conference on Manufacturing Systems*, pp. 619–624, 2016.

[23] P. A. Grobler and S. Warnich, "Human resource development (HRD) practices in local vs foreign companies in South Africa: is there a difference?" *Journal of Contemporary Management*, vol. 13, no. 1, pp. 702–724, 2016.

[24] A. Irajpour, H. Lou, and J. Morteza, "Identification and prioritization of organizational performance evaluation indicators based on SBSC (MCDM) sustainable balanced scorecard methods using language variables," *Journal of Development and Transformation Management*, pp. 8–24, 2016.

[25] M. Nekoei Moghadam, M. Amiresmaili, V. Sadeghi, A. H. Zeinalzadeh, M. Tupchi, and S. Parva, "A qualitative study on human resources for primary health care in Iran," *The International Journal of Health Planning and Management*, vol. 33, no. 1, pp. e38–e48, 2018.

[26] A. Fradi, M. Bricogne, M. Bosch-Mauchand, B. Louhichi, and B. Eynard, "Decision-making support in engineering design based on collaborative dashboards: integration of business intelligence techniques," in *International Conference on Research into Design*, pp. 1037–1047, Springer, Singapore, 2017, January.

[27] K. Moons, G. Waeyenbergh, L. Pintelon, P. Timmermans, and D. De Ridder, "Performance indicator selection for operating room supply chains: an application of ANP," *Operations Research for Health Care*, vol. 23, p. 100229, 2019.

[28] M. Modak, K. K. Ghosh, and K. Pathak, "A BSC-ANP approach to organizational outsourcing decision support-A case study," *Journal of Business Research*, vol. 103, pp. 432–447, 2019.

[29] B. Mohammad and S. Somayeh, "The role of balanced scorecard in evaluating the performance of managers," *Quarterly Journal of New Approach in Educational Management*, vol. 7, pp. 262–289, 2015.

[30] M. Abedian, A. Amindoust, R. Madahi, and J. Jouzdani, "Determining the best combination of perspective indicators of balanced scorecard by using game theory," *Journal of Optimization in Industrial Engineering*, vol. 14, no. 1, pp. 185–194, 2021.

[31] T. T. M. Huynh, A. D. Pham, and L. Le-Hoai, "Building a strategic performance management model for enterprises investing to coastal urban projects toward sustainability," *International Journal of Strategic Property Management*, vol. 25, no. 2, pp. 127–145, 2021.

[32] A. I. Nour, L. W. Alamleh, S. M. Al-Atoot, and K. M. Almomani, "The effect of applying balanced scorecard on earnings quality among banks listed in Palestine Exchange," *Cihan University-Erbil Journal of Humanities and Social Sciences*, vol. 6, no. 1, pp. 101–112, 2022.

[33] M. Sadeghimanesh and M. M. Peidaie, "Modelling human resources dashboard with balanced scorecard in customer and financial perspective (case study: sepah Bank)," *International Journal of Services and Operations Management*, vol. 26, no. 4, pp. 443–458, 2017.

[34] A. Mohammed, S. Sulaiman, and N. M. Zin, "The effect of management accounting system on circular economic: using agile-adaptive balanced scorecard as mediator," *International Journal of Accounting*, vol. 7, no. 40, pp. 78–94, 2022.

[35] C. H. Yang and K. C. Lee, "Developing a strategy map for forensic accounting with fraud risk management: An integrated balanced scorecard-based decision model," *Evaluation and Program Planning*, vol. 80, Article ID 101780, 2020.

[36] J. R Avella, "Delphi panels: research design, procedures, advantages, and challenges," *International Journal of Doctoral Studies*, vol. 11, no. 1, pp. 305–321, 2016.

[37] A. Jahanshahi, M. Kamali, M. Khalaj, and Z. Khodaparast, "Delphi-based prioritization of economic criteria for development of wave and tidal energy technologies," *Energy*, vol. 167, pp. 819–827, 2019.

[38] A. A. Olsen, M. D. Wolcott, S. T. Haines, K. K. Janke, and J. E. McLaughlin, "How to use the Delphi method to aid in decision making and build consensus in pharmacy education," *Currents in Pharmacy Teaching and Learning*, vol. 13, no. 10, pp. 1376–1385, 2021.

[39] S. Bathrinath, R. K. A. Bhalaji, and S. Saravanasankar, "Risk analysis in textile industries using AHP-TOPSIS," *Materials Today Proceedings*, vol. 45, pp. 1257–1263, 2021.