Original Article

A conceptual model of performance management using balanced scored card models and European foundation for quality management

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Abstract

Background: This study is aimed to present a conceptual model of performance management using Balanced Scored Card models and European Foundation for Quality Management

Methods: The method of present study was descriptive-survey. Its statistical population included all 1800 employees of Gol Gohar Mining and Industrial Company (n=904). The research sample size was estimated at 270 people based on Cochran's formula. They were selected by random sampling method. Data were collected through review of literature, research background and researcher-made Balanced Scored Card (BSC) and European Foundation for Quality Management (EFQM) questionnaires. To determine the strategic goals of Gol Gohar Mining and Industrial Company, BSC and EFQM models were used for quality function deployment (QFD). Quantitative goals of each measure, program, actions and cause and effect relationships were identified to determine the strategy map of Gol Gohar Industrial and Mining Company. confirmatory factor analysis, Cronbach's alpha and QFD matrix were used to analyze the data. SPSS-21 software, MINITAB-17, and LISREL- 8.8 software was used.

Results: Stakeholder goals, internal process, learning, financial resources and issues related to leadership, policy, growth and learning of human capital, partnerships and resources, internal processes, customers, human resources, Society and practice are important in the development model.

Conclusion: These finding can be used to present a conceptual model of performance management using BSC and EFQM models in Gol Gohar Mining and Industrial Company given the importance of mentioned company in the Iran's capital market and meeting the needs of society.

Keywords: BSC; EFQM; Gol Gohar Industrial Company; Total Quality Management.

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Introduction

To survive in competitive global markets and overcome challenges, industrial sectors adopt newer management systems to clarify their strategies to overcome their problems (1). An inappropriate evaluation system is considered a major shortcoming. Thus, to apply management, evaluate and improve performance results, appropriate tools should be used to measure the efforts and results (2). Experts believe that management and evaluation are appropriate organizational tools to overcome the challenges (3). Performance management has a comprehensive attitude towards

performance of people and organizations (4).

It is recommended to connect the performance management system to other human resource management systems in organizations to improve the performance evaluation process and use its results (5). The importance of research, development and performance evaluation in industry has increased to such an extent that factories have to think about their own development and evaluation (6). One of the problems of all organizations, especially Gol Gohar Industrial Company is that the performance measurement models have not changed in accordance with the strategies, which have created several challenges to development of the company (7).

To solve problems, among the existing performance evaluation models, the Balanced Scorecard and the European Foundation for Quality Management Model can transform organizations into strategy-oriented organizations and can be used as a tool for evaluation of the organization performance from four financial dimensions, pay attention to customer, internal processes of business and growth and learning, and the goals and criteria of balanced evaluation method (8).

In addition to physical development, Gol Gohar Company has considered archiving to advanced technologies in its plans. However, the recent statistics suggest that the current evaluation system has not had a necessary efficiency and more accurate performance evaluation models are needed. Balanced scorecard and European Foundation for Quality Management models are helpful in solving problems. To achieve the aim of this research, the following questions were raised: first, what is the relationship between goals of BSC Balanced Scorecard and EFQM criteria using QFD matrix? And second, what are the balanced scorecard model and European Foundation for Quality Management model using the QFD matrix?

Methods

The present study was applied in terms of aim, descriptive-correlational in terms of nature and survey in terms of method. The statistical population of the study included the employees of Gol Gohar Mining and Industrial Company (n=904). The sample size was determined using the Cochran's formula as follows.

$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

$$n = \frac{\frac{Z^2_{1-\frac{a}{2}} \times p \times q}{d^2}}{1 + \left[\frac{1}{N}\left(\frac{Z^2_{1-\frac{a}{2}} \times p \times q}{d^2} - 1\right)\right]} \Rightarrow n = \frac{(1/96)^2 \times \frac{(0/5 \times 0/5)}{(0/05)^2}}{1 + \frac{1}{904}(1/96)^2 \times \frac{(0/5 \times 0/5)}{(0/05)^2} - 1} \cong 270$$

Z = 1. 96: In standard normal distribution. P = 0. 5 and q = 1-p: The ratio of community units to a desired property. A = 0. 05: The first type of error. D = 0. 05: Maximum estimated error. N: Population size. Accordingly, the sample size was estimated at 270 people who were selected by stratified random sampling method. To collect data based on previous studies and research literature, a researcher-made questionnaire was developed on the Likert scale.

The BSC balance is a predictor variable and includes 28 questions and 4 components of stakeholder goals, internal process, growth and learning goals, goals of budget and financial facilities. EFQM variable is also a predictor variable and includes 50 questions and 9 components of leadership and strategy, human resources, resources,

customers' results, human resources results, society results, and key performance results. To examine the validity of the questionnaires, the content validity ratio or CVR method was used. The formula of this method is as follows:

Where, N represents the total number of responding experts, n_e is the number of experts who have approved the item. The CVR value can be calculated for all indicators and factors. The closer the CVR value is to one, the more respondents have identified the item appropriate.

In this study, the validity of BSC and EFQM questionnaires were determined by 15 experts and university professors. The validity of BSC questionnaire was obtained at 94.9 and the validity of EFQM questionnaire was obtained at 93.8. Also, confirmatory factor analysis was used as the second method to examine the validity of the questionnaires. Based on the calculations, the reliability of the BSC questionnaire using Cronbach's alpha was calculated at 99.1% and the reliability of the EFQM questionnaire was calculated at 94.6%, which are acceptable values since they are larger than 0.7. SPSS-21 software, MINITAB-17, and LISREL- 8.8 software was used. The QFD matrix was used to analyze the data.

QFD analysis will be done based on the following steps:

Step 1: Preparing a list of criteria (WHATs)

Step 2: Preparing a list of technical definitions (HOWs)

Step 3: Developing a matrix of relationships between WHATs and HOWs

Step 4: Forming a quality cell

Step 5: Determining the final priority of performance requirements

After forming the relationship matrix between the balanced scorecard criteria and EFQM, in the next step, the relationships between them were identified. The QFD team was used to analyze QFD. Once the relationship matrix was formed, the relationship between each of the technical characteristics (HOWs) and the customer requirements (WHATs) should be determined. For this purpose, the QFD executive team determines the desired relationships based on the opinion of experienced engineers and specialists of the organization, customer opinions, statistical data, etc. The following symbols were used to determine the relationships of the elements of the rows and columns of the matrix:

Table1: Symbols to determine the relationships of the elements

Symbol	Degree of relationship	score
●	Strong	9
○	Moderate	3
Δ	Weak	1

Not all row elements are necessarily related to column elements. However, if one of the requirements (column elements) is not reasonably related to the quality requirements, that characteristic is redundant or one or more qualitative requirements are not considered. Lack of relationship between a request and the technical requirements indicates that a number of technical and engineering requirements are not considered, so the matrix columns should be developed and completed.

Conceptual model of research

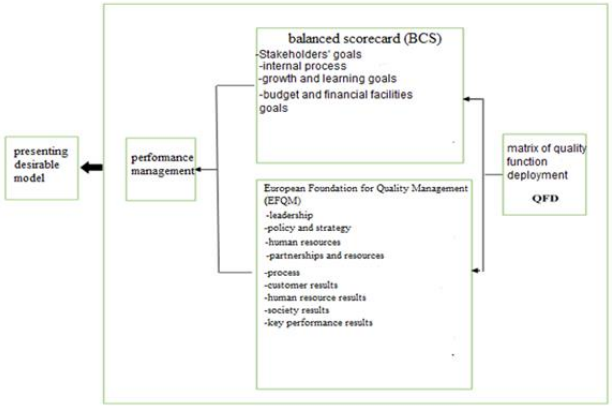

Figure 1. Conceptual model of research

Results

Based on Table 2, due to the smaller level of significance, the factor loads are determined from 0.05. All observed variables significantly explain their latent variable and it can be stated that all questions of the performance management questionnaire with a balanced scorecard have a good validity. (p is the abbreviation of the question and the numbers are the number of the questions.)

Based on Table 3, due to the smaller level of significance, factor loads are determined from 0.05. All observed variables significantly explain their latent variable and it can be stated that all questions of the performance management questionnaire with EFQM have a good validity.

Determining the relationships between BSC and EFQM models using the QFD matrix

As seen in Table 4, the opinions of the expert group on the importance of each of the requirements based on each criterion were obtained in the form of strong [9], moderate [3] and weak [1]. This data should be used for the matrix of relationships to identify the priority of requirements. The results after scaling the data are presented in Table 5.

The final weighting shown at the end of Table 5 indicates the importance of the criteria corresponding to that column versus the performance management

Table 2. Factor loads and validity indices of performance management variable with balanced scorecard

Questions		Non-standard estimation	Standard error	Critical ratio (statistic t)	p-value	Standard coefficient	Result
Stakeholders' goals	P1	1.000		0.561	5.378	0.000	Confirmed
	P2	1.052	0.118	0.673	8.936	0.000	Confirmed
	P3	0.951	0.086	0.728	11.057	0.000	Confirmed
	P4	0.777	0.089	0.532	8.712	0.000	Confirmed
	P5	1.045	0.097	0.669	10.734	0.000	Confirmed
	P6	1.007	0.101	0.652	9.977	0.000	Confirmed
	P7	1.040	0.103	0.661	10.092	0.000	Confirmed
Internal process	P8	1.000		0.670	6.234	0.000	Confirmed
	P9	1.057	0.114	0.653	9.253	0.000	Confirmed
	P10	1.028	0.111	0.653	9.249	0.000	Confirmed
	P11	0.746	0.094	0.547	7.972	0.000	Confirmed
	P12	0.369	0.083	0.274	4.188	0.000	Confirmed
	P13	0.989	0.133	0.576	7.449	0.000	Confirmed
	P14	1.032	0.125	0.672	8.233	0.000	Confirmed
Growth and learning goals	P15	1.000		0.624	6.108	0.000	Confirmed
	P16	0937	0.133	0.531	7.031	0.000	Confirmed
	P17	0.767	0.099	0.531	7.716	0.000	Confirmed
	P18	1.222	0.123	0.738	9.961	0.000	Confirmed
	P19	1.171	0.121	0.709	9.691	0.000	Confirmed
	P20	0.698	0.103	0.457	6.793	0.000	Confirmed
	P21	0.760	0.110	0.516	6.891	0.000	Confirmed
Goals of budget and financial facilities	P22	1.000		0.565	5.237	0.000	Confirmed
	P23	0.760	0.110	0.516	6.891	0.000	Confirmed
	P24	1.418	0.167	0.709	8.473	0.000	Confirmed
	P25	1.242	0.150	0.678	8.262	0.000	Confirmed
	P26	1.332	0.150	0.706	8.900	0.000	Confirmed
	P27	1.272	0.145	.689	8.763	0.000	Confirmed
	P28	1.381	0.166	0.635	8.317	0.000	Confirmed

Table 3. Factor loads and validity indices of performance management variable with EFQM

Questions		Non-standard estimation	Standard error	Critical ratio (statistic t)	p-value	Standard coefficient	Result
Leadership	Q1	1		0.58	7.269	0.000	Confirmed
	Q2	0.829	0.099	0.87	8.345	0.000	Confirmed
	Q3	0.816	0.104	0.51	7.883	0.000	Confirmed
	Q4	1.064	0.116	0.36	9.212	0.000	Confirmed
	Q5	1.114	0.12	0.82	9.312	0.000	Confirmed
Policy and strategy	Q۶	1		0.452	4.941	0.000	Confirmed
	Q7	0.871	0.12	0.83	7.269	0.000	Confirmed
	Q8	0.584	0.103	0.35	5.656	0.000	Confirmed
	Q9	1.15	0.142	0.664	8.094	0.000	Confirmed
Growth and learning of human capitals	Q10	1		0.752	7.296	0.000	Confirmed
	Q11	1.146	0.12	0.669	9.509	0.000	Confirmed
	Q12	1.197	0.122	0.698	9.804	0.000	Confirmed
	Q13	0.825	0.101	0.554	8.201	0.000	Confirmed
	Q14	1.043	0.142	0.563	7.334	0.000	Confirmed
Resources	Q15	1		0.546	5.362	0.000	Confirmed
	Q16	1.123	0.149	0.585	7.516	0.000	Confirmed
	Q17	0.954	0.079	0.767	12.039	0.000	Confirmed
	Q18	0.504	0.072	0.427	6.961	0.000	Confirmed
	Q19	1.629	0.208	0.804	7.838	0.000	Confirmed
Internal processes	Q20	1		0.913	9.312	0.000	Confirmed
	Q21	0.954	0.079	0.767	12.039	0.000	Confirmed
	Q22	0.504	0.072	0.427	4.961	0.000	Confirmed
	Q23	4.629	0.208	0804	7.838	0.000	Confirmed
	Q24	1.189	0.157	0.656	7.581	0.000	Confirmed
	Q25	0.694	0.086	0.546	8.108	0.000	Confirmed
	Q26	1.067	0.117	0.627	9.082	0.000	Confirmed
Customer results	Q27	1		0.932	3.801	0.002	Confirmed
	Q28	1.129	0.112	0.66	10.074	0.000	Confirmed
	Q29	1.007	0.101	0.652	9.977	0.000	Confirmed
	Q30	1.04	0.103	0.661	10.092	0.000	Confirmed
	Q31	0.777	0.089	0.532	8.712	0.000	Confirmed
	Q32	1.805	0.143	0.95	8.665	0.000	Confirmed
	Q33	1.632	0.244	0.92	8.664	0.000	Confirmed
	Q34	1.037	0.222	0.87	8.545	0.000	Confirmed
	Q35	1.078	0.274	0.61	8.33	0.000	Confirmed
Human resource results	Q36	1		0.952	8.397	0.000	Confirmed
	Q37	1.072	0.126	0.59	9.099	0.000	Confirmed
	Q38	0.593	0.128	0.75	8.229	0.000	Confirmed
	Q39	1.197	0.149	0.57	8.509	0.000	Confirmed
	Q40	0.716	0.133	0.63	8.759	0.000	Confirmed
society results	Q41	1		0.87	9.035	0.000	Confirmed
	Q42	1.37	0.29	0.98	8.324	0.000	Confirmed
	Q43	1.501	0.128	0.58	8.131	0.000	Confirmed
Key performance results	Q44	1		0.83	7.612	0.000	Confirmed
	Q45	0.755	0.174	0.76	4.41	0.000	Confirmed
	Q46	0.954	0.168	0.96	3.801	0.003	Confirmed
	Q47	0.679	0.182	0.57	4.824	0.000	Confirmed
	Q48	1.159	0.152	0.99	7.716	0.000	Confirmed
	Q49	0.871	0.12	0.83	7.269	0.000	Confirmed
	Q50	0.584	0.103	0.35	5.656	0.000	Confirmed

Table 4. Relationships between BSC and EFQM models using QFD matrix

	Determining the relationship between BSC goals and EFQM competence criteria	Weight of criteria	leadershi	Policy and	Growth and learning	Partnerships and	Internal processe	Customers'	Human resource	Society'	Key performa
Stakeholders' goals	Gaining customer satisfaction with the quality of products	0.0318	●	○	●	○	●	●	●	●	
	Increasing the value of owners' assets	0.0359	○	○	●		●	●	○	●	●
	Customer profitability level	0.0336	●	○	○	●	○	●	Δ	●	●
	Annual sales based on the number of customers	0.0371	●	●	○	●		●		●	○
	level of customer satisfaction	0.0342	●	●	●	●	●	●		●	Δ
	Rate of absorbing new customers	0.0359	○	●	Δ	●	Δ	●	Δ	○	●
	Focus on identifying key customers	0.0347	Δ	○	●	●	●	●	○	●	○
Internal process	Providing a process for consultation by industry experts	0.0371	○	Δ	○	●	○	●	○	●	●
	Holding in-service training courses	0.0330	●	Δ	●	○	○	●		●	●
	Utilizing innovations and inventions	0.0.42	●	●	Δ	●	○	○	●	○	●
	Improving information organization and designing flexible and integrated software system	0.0365	Δ	○	●	●	●	○	●		●
	Average turnover of inventory of goods relative to turnover of assets	0.0342	●	Δ	●	●	●	●	●	●	●
	Supervising the implementation of notified programs to ensure the optimal process of actions and operations	0.0359	○		●	○	●	Δ	●	Δ	●
	Optimization of the evaluation system and the performance of the educational process and its continuous improvement	0.0347	Δ	Δ	●	Δ	○	●	●	●	●
Goals of growth and learning	Improving the job skills of employees	0.0382	○	●	●	●	●		○	Δ	○
	Per capita educational investment in the organization	0.0394		●	●	○	●	●	●	Δ	●
	employee promotion based on merit	0.0376	●	○	●	Δ	●	●	●	●	Δ
	Improving employee training programs	0.0371	●		●		●	○	Δ	○	●
	Improving employee productivity	0.0324	●	●	●		●	Δ	●	Δ	●
	Exchange of information and scientific and economic cooperation with relevant organizations	0.0359	●	Δ	●	Δ	○	●	○		●
	Holding training classes in various areas	0.0342	●	●	●	○	●	○	Δ	Δ	●
Goals of budget and financial [illegible]	Increasing employee training budget	0.0376	○	●	○	●	●	●	●		○
	Allocating rewards to employees	0.0394	○	●		●	●	○	●	●	●
	Increasing the value of owners 'assets and shareholders' profits	0.0388	○	○	●	○	●	Δ	●	●	●
	Development of modern equipment and technologies in accordance with modern facilities	0.0376	●	○	●		●		●	○	Δ
	Profitability of assets	0.0353	●	●	●	●	●		●	Δ	●
	Capital profitability	0.0313	●	Δ	●	Δ	●	Δ	○	●	○
	Sales profitability and cash flow	0.0365	○	●	●	●	●	○	●	○	Δ

strategy in Gol Gohar Mining and Industrial Company. In this matrix, the scores of the EFQM model criteria versus the industry strategy are also compared with the standard scores of this model. As seen, these scores are largely close to each other, meaning that the criteria overlap for realization of the goals of the organization.

Table5. Relationship matrix for relationships between BSC and EFQM models using QFD matrix

Determining the relationship between BSC goals and EFQM competence criteria		Weight of criteria	leadership	Policy and strategy	Growth and learning of human capitals	Partnerships and resources	Internal processes	Customers' results	Human resource results	Society results	Key performance results
Stakeholders' goals	Gaining customer satisfaction with the quality of products	0.0318	9	3	9	3	9	9	9	9	
	Increasing the value of owners' assets	0.0359	3	3	9		9	9	3	9	9
	Customer profitability level	0.0336	9	3	3	9	3	9	1	9	9
	Annual sales based on the number of customers	0.0371	9	9	3	9		9		9	3
	level of customer satisfaction	0.0342	9	9	9	9	9	9		9	1
	Rate of absorbing new customers	0.0359	3	9	۱	9	1	9	1	3	9
	Focus on identifying key customers	0.0347	1	3	9	9	9	9	3	9	3
Internal process	Providing a process for consultation by industry experts	0.0371	3	1	3	9	3	9	3	9	9
	Holding in-service training courses	0.0330	9	1	9	3	3	9		9	9
	Utilizing innovations and inventions	0.0342	9	9	1	9	3	3	9	3	9
	Improving information organization and designing flexible and integrated software system	0.0365	1	3	9	9	9	3	9		9
	Average turnover of inventory of goods relative to turnover of assets	0.0342	9	1	9	9	9	9	9	9	9
	Supervising the implementation of notified programs to ensure the optimal process of actions and operations	0.0359	3		9	3	9	1	9	1	9
	Optimization of the evaluation system and the performance of the educational process and its continuous improvement	0.0347	1	1	9	1	3	9	9	9	9
Goals of growth and learning	Improving the job skills of employees	0.0382	3	9	9	9	9		3	1	3
	Per capita educational investment in the organization	0.0394		9	9	3	9	9	9	1	9
	employee promotion based on merit	0.0376	9	3	9	1	9	9	9	9	1
	Improving employee training programs	0.0371	9		9		9	3	1	3	9
	Improving employee productivity	0.0324	9	9	9		9	1	9	1	9
	Exchange of information and scientific and economic cooperation with relevant organizations	0.0359	9	1	9	1	3	9	3		9
	Holding training classes in various areas	0.0342	9	9	9	3	9	3	1	1	9
Goals of budget and financial facilities	Increasing employee training budget	0.0376	۳	9	3	9	9	9	9		3
	Allocating rewards to employees	0.0394	3	9		9	9	3	9	9	9
	Increasing the value of owners 'assets and shareholders' profits	0.0388	3	3	9	3	9	1	9	9	9
	Development of modern equipment and technologies in accordance with modern facilities	0.0376	9	3	9		9		9	3	1
	Profitability of assets	0.0353	9	9	9	9	9		9	1	9
	Capital profitability	0.0313	9	1	9	1	9	1	3	9	3
	Sales profitability and cash flow	0.0365	3	9	9	9	9	3	9	3	1
	Final weighting		5.786	4.975	7.213	5.318	7.129	5.586	5.658	5.199	6.472

Discussion

In the present study, using the strategic map and cause and effect relationships, components strategic (goals) in four balanced scorecard perspectives were connected to each other. These components display the path to achieving the successful mission and vision). To examine the relationship between the two BSC and EFQM models, the quality function deployment (QFD) methodology was used, so that by placing the generated goals with the BSC approach in the effectiveness section and the EFQM model in the efficiency section, the performance of Gol Gohar Mining and Industrial Company improves. The relationships that obtained the highest score caused a relationship between the two models. Thus, the relationships, which are higher than 8, create integration between the goals (BSC) and criteria (EFQM). Finally, the alignment and integration of the two models can provide an appropriate framework for performance management. Also, integrating the two mentioned models, two factors of effectiveness BSC) and efficiency (EFQM) improve the performance continuously and increases the productivity of Gol Gohar Mining and Industrial Company. In the applied method of the present method, similar studies performed in the following are described. By integrating Balanced Scorecard (BSC) and EFQM models, Ahmadvand and et al. showed that a suitable framework can be provided for performance evaluation. In the mentioned study, after reviewing the theoretical concepts and comparing the mentioned models, the strengths and weaknesses of each were examined and finally, a conceptual model of performance management was presented and that model provided useful results. Two instruments of interview and questionnaire were used to identify strategic goals with a balanced scorecard approach and in accordance with the set vision. Then, the QFD matrix was used to determine the causal relationships between the goals. Finally, to align these two models and realize the two factors of effectiveness and efficiency, the QFD matrix was used. Integration of the two models caused continuous improvement and productivity in the university (9).

Khanmohammadi otaghsara et al. carried out a study entitled "The effective factors in managing multilevel performance based on the balanced scorecard: A case study of Higher Education Institute of Applied Science and Technology of Water and Power Industry. The results of the study revealed that in the form of 4 dimensions of the balanced scorecard, the factors affecting performance management at three levels of individual, group and organizational levels have been identified and presented and are related to each other (10) .In a study entitled "Conceptual model of performance management in mission-oriented organizations" , Deft, showed that integrating the Balanced Scorecard (BSC) and European Foundation for Quality Management (EFQM) models can provide a good framework for performance evaluation, since these two models, regardless of their important similarities, have different origins and can create a good overlap. Therefore, the conceptual framework presented in the mentioned study can be used for evaluation and management of organizational performance based on the integration of these two models (11).

Johnson & Diana, conducted a research entitled "Comparison of Organization Evaluation Methods: Balanced Scorecard (BSC) and Excellence Model (EFQM)". Their research results showed that the role of strategic feedbacks and learning to compare the BSC and EFQM evaluation methods to examine the management control systems are tools for evaluating organizational performance with the goal of continuous organizational improvement (12). EFQM model is a non-prescriptive framework based on 9 criteria. Its five criteria are enablers and four criteria are results. Enabler criteria cover what the

organization should do and result in criteria cover what an organization has achieved (13). QFD matrix is a quality design for the final product through systematic expansion of relationships between customer demands and product quality characteristics, which starts with functional components quality and expands to the quality of all processes (14).

Based on the present study stakeholders' goals, internal processes, learning, financial resources and issues related to leadership, policy, growth and learning of human capital, partnerships and resources, internal processes, customers, human resources, Society and practice are important in the development model. Ghorbani et al. conducted a study entitled "Evaluating the performance of libraries of the Cultural and Artistic Organization of Tehran Municipality based on the Balanced Scorecard (BSC) model". The results revealed that the "customer" and "internal processes" dimensions obtained the highest level of balance, followed by the "financial" dimension and the "growth and learning" dimension obtained the lowest level of balance. They concluded that performance is balanced in three dimensions processes", "customer satisfaction" and "financial" and unbalanced in the dimension of "growth and learning" (15). Moeinian et al. showed that based on the green process data approach, promoting green culture, environmental partnerships, educational development and promotion, heterogeneity between forces in the organization, lack appropriate culture-building towards green performance evaluation attitudes and lack of green work standards, development of customer relationship network, constructive interactions with the environment, strengthening of green employment criteria, review of the environmental index, green competitive advantage as components of green economic, improvement of quality of psychological life of the society and employees, reducing destructive biological variables and general reduction of costs are antecedents and consequences of green management in the municipality of Tehran (7).

Draganidis & Mentzas carried out research to "Describe and measure the performance of organizations based on the balanced scorecard model". The results of the mentioned study showed that the performance of the organization was not satisfactory in most indicators (α <0.05). Also, the results showed that the General Department of Taxation of Hamedan Province has achieved its goals by 105.25% from a financial point of view, 67% from taxpayers' point of view, 63% from the internal point of view, and 59% from the growth and learning point of view (16) Karaevli conducted research on "Comparison of Organization Evaluation Methods: Balanced Scorecard (BSC) and Excellence Model (EFQM)". The results revealed that the Balanced Scorecard (BSC) and the European Foundation for Quality Management (EFQM) are tools for evaluating organizational performance with the aim of continuous organizational improvement. Also, due to the development of methods for evaluating the performance of the organization, it is necessary to pay sufficient attention to selecting a method that has the highest possible return on investment (17). Smith, stated that the development and improvement of the production system and macro supervision over its implementation is considered one of the most vital processes of holding companies in the area of planning, performance management of subsidiaries through which parent companies can monitor the performance of subsidiaries (18).

Conclusion

With increasing competition in manufacturing and services, organizations need indicators and models to measure their performance. The emergence of such a need and inefficiency of traditional performance measurement systems led to the creation of new models of performance evaluation at the organizational level. At

present, performance improvement is the priority of many organizations around the world, and given the expansion of organizational performance evaluation methods, it is necessary to pay sufficient attention to selecting the method that has the highest possible return on investment.

Recommendations

In line with the present results, the following recommendations are presented:

It is recommended for managers of Gol Gohar Industrial and Mining Company to expand the proposed model to the level of EFQM results criteria and the indicators and executive measures of balanced scorecard in future researches and to other QFD stages to operationalize the organization's strategies and capabilities. It is also recommended to examine the effects of its implementation on the strategy and performance of the organization, since their continuous monitoring and improvement pave the way for Gol Gohar Industrial and Mining Company to achieve its vision and excellence. Given the relationship between strategic goals (BSC goals) and performance evaluation criteria (EFQM), it is recommended to the managers of Gol Gohar Industrial and Mining Company to use performance evaluation criteria (EFQM) to determine the level of achieving the goals and increase the efficiency of these goals. For example, to evaluate the goal of making the structure of Gol Gohar Industrial and Mining Company efficient, the society results and the key performance results of the performance evaluation should be measured by criteria related to leadership and management and companies and financial and information resources.

Author's contribution

Seyed Ali AlaviNasab and Saeed Sayadi developed the study concept and design. Masoud Pourkiani acquired the data. Sanjar Salajegheh analyzed and interpreted the data, and wrote the first draft of the manuscript. All authors contributed to the intellectual content, manuscript editing and read and approved the final manuscript.

Informed consent

Questionnaires were filled with the participants' satisfaction and written consent was obtained from the participants in this study.

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Conflict of interest

The authors declare that they have no conflict of interests.

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