



ORIGINAL ARTICLE

Presenting a Qualitative Model for the Implementation of Transformational Leadership in the Form of an Interactive Leadership Framework (Case Study: Hospitals in Zanjan Province)

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ABSTRACT

Background: The method of choosing the leadership style of an organization is very important in the success of the organization in gaining a competitive advantage in society, and on the other hand, the method of managing and creating change and innovation is also considered necessary for the success of the organization as these factors dynamically affect each other. Some create obstacles on the way and some strengthen each other.

Methods: The statistical population considered for this research in the qualitative part included participants, some of whom were academic professors, and some were managers of high managerial and organizational levels who were proficient in management topics in medical sciences hospitals. In terms of method, this research had a mixed approach. In other words, a combination of quantitative and qualitative methods was used. In data collection, in general, documentary studies and field method using MAXQDA software were used.

Results: The results of the evaluation showed that the observed correlation between the examined components and the transformative leadership variable was completely significant. Therefore, it was concluded that the model examined in this research had a sufficient level of significance to be used as a guide to increase the transformation of the organization by relying on the role of interactive leadership in the hospitals of Zanjan province.

Conclusion: One of the important and influential factors of an organization's success is how to apply management and effective leadership styles of managers of that organization. There are managers who can choose different styles in directing human resources. Their appropriate behavior patterns in any organization cause strong morale and motivation among employees, -and subsequently, increase the motivation of employees, their level of satisfaction and the level of productivity.

Keywords: transformational leadership, interactive leadership, organizational transformation

Introduction

Rapid changes in the environment, industry, customers, suppliers, competitors, colleagues, products, and services are all forces that affect the organization and cause the need for excellence. In the meantime, it is not possible to know the environment, to recognize and understand developments and to be aware of the opportunities, threats, limitations and facilities that are considered essential for new organizations through traditional management approaches. Extensive changes and

globalization in today's world require a different and new leadership style that realizes the goals of the organization with the optimal use of material and human resources and assets which is able to develop capacities and use them. A leader is a person who attracts people who are required to achieve organizational goals, and according to researchers, managers/leaders must inspire enthusiasm and support their teams for the proposed organizational transformation (1). Transformational leadership

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strengthens people's internal motivation based on meaning, competence and self-determination. Some researchers have pointed out that transformational leadership can be associated with positive progress at work. The elements of expectation and motivation in the transformational leadership style affect the employees' perception of the characteristics of the work situation. On the other hand, interactive leadership encourages others to excel in their performance by using possible rewards; that is, they offer real rewards for satisfactory performance. However, transformational leadership can also achieve results by providing clear expectations and careful monitoring of mistakes, deviations, and errors (management by exception); therefore, transactional leaders motivate their subordinates by using extrinsic motivation and emphasizing the exchange of rewards or disciplinary actions as a function of employee performance adequacy (2).

The way of choosing the leadership style of an organization is very important in the success of the organization in gaining a competitive advantage in the society, and on the other hand, the way of managing and creating change and innovation is also considered necessary for the success of the organization as these factors dynamically affect each other. Some create obstacles on the way and some strengthen each other; thus, by adopting the right leadership style and creating the right conditions to deal with change in the organization, the leaders should guide the organization towards gaining capabilities and has competitive advantage. One of these concepts is transformational leadership. Transformational leadership is defined as an interactive process between leaders and employees and emphasizes that leaders should propose higher levels of ideals, beliefs and values and, as a result, increases the awareness of subordinates so that employees can achieve a high level in their performance. Researchers have stated that transformational leaders inspire their followers by encouraging individual and social identification with the mission and goals of their leaders and organization. By strengthening identification with

the organizational mission, they increase employee participation, cohesion, commitment, power, and organizational performance. In addition, transformational leadership is informed by inspiring motivation, a collective sense of mission, increased awareness of tasks, job satisfaction, and exciting vision and aspiration (3).

With a brief look at previous literature in this field, it is clear that despite the importance of the issue of transformational leadership style in organizations and the study of social, economic, and organizational consequences resulting from its weakening or collapse (in government organizations); there have not been many deep studies on this matter and the existing few ones faced this phenomenon by adopting positivist approaches and quantitative methods, which caused many conceptual gaps in the issue of transformative leadership functions. This conceptual gap hindered the growth and acceptance of transformational leadership (4). Knowing that transformational leadership and related behaviors had positive effects is an important point of departure. However, accepting these positive effects requires a greater understanding of the effectiveness of this style. This understanding can refine the foundations of transformational leadership by going beyond transformational leadership behaviors and shedding light on the basic processes, internal influences and requirements and dynamics of the phenomenon under discussion. From a practical point of view, the result is that with more awareness of the performance of this leadership style, the application of transformational leadership and its support will increase. In addition, when organizations have a better understanding of the "performance" of transformational leadership, and they can better create the necessary capacities for this type of leadership. Due to the fact that researchers have not paid much attention to how transformational leaders create organizational change in the past, human resource management in Iran suffers from a lack of knowledge regarding this virgin and key

issue for the society. An issue that can have different effects not only on government organizations but also on other areas of society's life related to it, which determines the importance of conducting this research. On the other hand; the lack of such research has caused many officials and policy makers in the field of organizational leadership to look at all forms of transformational leadership at the same time, and therefore, when an organization is in turmoil, they offer the same solutions and neglect to understand the complexities of the reality inside and outside the organization. They do not understand various origins and consequences of the individual social psychology effective in the performance of the leaders of the organization. The lack of accurate understanding of how transformational leaders create change in conventional and unconventional situations and conditions in order to achieve the organization's goals leads to the loss of time and a vicious cycle of useless decisions and actions for the organization, which has heavy consequences for the organization. Therefore, from this point of view, the current research set its mission and goal to study the presentation of a transformational leadership model in the form of an interactive leadership framework in medical sciences hospitals, so that in this way a deeper understanding of the existing situation in the operational hidden layers of organizational transformation can be achieved; An understanding that can be considered as a research and management field for future studies and programs (5).

The importance of research

Transformational leadership allows employees to recognize and commit to a shared organizational vision and also encourages their willingness to work harder at work. Ideal influence represents an environment in which followers feel admired and believe in and follow their leaders. Individual consideration is the ability of leaders to focus on people's needs for development and achievement while perceiving them as their mentors or coaches. Intellectual stimulation occurs when

transformational leaders reassess current assumptions, customs, and beliefs in an organization to propose new ideas and ways of doing tasks. According to the existing research, transformational leadership encourages subordinates to sacrifice their personal interests for the interests of the organization by giving more meaning to their work, inspiring subordinates' high-level needs and creating an atmosphere of mutual trust, and by developing the capabilities of their followers, it has a positive effect on performance. (4). Transformational leadership focuses on real-time problems, defines new criteria, creates different perceptions, and creates and shapes the behavior of subordinates to effectively achieve organizational goals, as employees continue to improve their ability levels in order to meet leaders' expectations, create more organizational citizenship behaviors, and stimulate creative thinking. Avolio (3) introduced the distinctive features of this group of leaders as positive thinking, self-confidence, building trust in subordinates to achieve goals and strengthen their abilities, stimulating people to gain awareness of issues and solve them again (5).

Eliana and Maarif (6) stated that transformational leadership affects employee performance, although more extensive research is needed to evaluate transformational leadership and other determinants. Afriyie et al (5) found that transformational leadership characteristics increased employee creativity and led to innovative practices and improved performance Gabolti et al(3). Considering the importance of the subject and the lack of research in this field, the authors sought to present a transformational leadership model in the form of an interactive leadership framework.

Materials and methods

The current research, from the perspective of the target and the user audience, is a part of applied research, and in fact, the purpose of this research was to develop applied knowledge in a specific field. Also, in terms of the characteristics of the

subject, because the purpose of the research was to identify indicators, dimensions and components, it was an exploratory research, and in terms of the fact that the researcher did not interfere with the data, it was carried out in a descriptive way. It should be said that in terms of the time of data collection, this research was a survey study, and finally, in terms of the time dimension, it was a cross-sectional research, and in terms of subject, it was in the field of human resources management. In terms of method, this research was a mixed (qualitative-quantitative) approach. In other words, a combination of quantitative and qualitative methods was used. The qualitative dimension was derived from the interpretive paradigm and by using the used sources and using the data theory method of the foundation, the model of the transformative leadership model was presented in the form of an interactive leadership framework. After designing the research model, in the quantitative dimension, in order to validate and fit the model as well as explain the relationship between the desired indicators and components, from the structural and soft equation model SPSS and LISREL software were used. In fact, both approaches help the researcher to answer part of human problems scientifically (7).

The statistical population considered for this research; In the qualitative part, it includes participants, some of whom include academic professors, and some of them include managers of high managerial and organizational levels who are proficient in management topics in medical sciences hospitals. In the qualitative part of the research, the conditions for selecting the participants are considered to be the most important steps because the credibility of work results depends on the competence and knowledge of these people. The statistical population in the quantitative part of the research is all the customers and users of the services of medical sciences hospitals. In the quantitative part of the research, in order to test the model, the sampling method was simple random sampling (one of the possible sampling methods) and the sample size was

determined by Cochran's formula. According to the calculation of Cochran's formula, a minimum sample size of 384 has been obtained, and this number of questionnaires was distributed among the customers and users of the services of medical sciences hospitals. 379 questionnaires have been completed correctly.

Documentary studies and field methods were generally used in data collection. But considering that the research was based on the theorizing of the foundation data, it will be adapted from the theoretical literature and high-quality documents. The tool used in the qualitative dimension will be a semi-structured interview and in the quantitative dimension a questionnaire. Considering that the research method was mixed (qualitative-quantitative). in the quantitative phase, a researcher made a questionnaire (according to the innovation of the research) to collect data about the indicators and categories identified in the qualitative phase. After recording and saving the interviews in the form of text, the initial indicators were extracted and then the final indicators were identified. It is worth mentioning that in order to check the content of the interviews, conceptualization and extraction of categories, a systematic method that emphasized the use of data analysis steps through open, central and selective (selective) coding was utilized using MAXQDA software. In the quantitative part of the research, descriptive statistics, confirmatory factor analysis and structural equation modeling were used. In other words, at this stage, the relationships of each of the extracted components in the conceptual model were independently examined and then simultaneously predicted using structural equation modeling.

It included informed consent for participation, confidentiality of interviews and completed questionnaires, and the right to withdraw from the study at the discretion of the participants in both quantitative and qualitative sections.

Results

In order to check the reliability of the qualitative research findings, the researcher also tried to use two simultaneous analysts (researcher and an

independent analyst) in order to identify semantic units. After the implementation of the interviews and coding, the findings of each of the interviewees were randomly given feedback to the same person in order to confirm the correctness of the impressions made from that interview, and then the qualitative findings from the coding were randomly presented to some of the interviewees in order to confirm this opinion. To clarify the validity and reliability of the qualitative stage, a table and codes were presented to them in order to match the semantic units. Moreover, in order to further investigate the validity of the interviews, the approach of experts' judgment about face and content validity was used. The decision was made based on the votes of seven participants.

The validity score was equal to 71%, which according to China (1998) had a good value, and therefore, the validity of the interview protocol was supported. To evaluate the reliability of the interview protocol, the percent agreement method between two coders was used. For this purpose, two coders coded three interviews randomly, and at the end, they expressed their opinion about the similarity of the codes under the title of agreement and disagreement, and the numerical calculation percentage of agreement was according to Table 2: According to the above Table, the reliability coefficient was equal to 0.8% and this value was more than 0.6, and therefore, it was approved. Based on the approach of Flint et al (7), for the

final evaluation and the reliability of the findings of the qualitative stage, a combination of criteria was been used, which was reported in Table 3:

In the current research, 12 experts were surveyed and the index calculated for the items of the current research was calculated to be more than 0.56 which was confirmed from this point of view. Also, the content validity index was used to measure the validity of the questionnaire. The CVI index was presented by Waltz and Bassel. To calculate CVI, experts were asked to determine the degree of relevance of each item with the following four-part spectrum: 1. Unrelated 2. The need for fundamental revision 3. Relevant but needs revision 4. Totally relevant. The number of experts who chose option 3 and 4 was divided by the total number of experts. If the value was less than 0.07, the item was rejected, if it was between 0.7 and 0.79, it had to be revised, and if it was greater than 0.79, it was acceptable. This case was also evaluated about the research items and the amount of this index was calculated and confirmed for all the items of more than 0.79. In the end, to evaluate the reliability of the questionnaire in the first quantitative stage, the questionnaire was given to the members of the statistical sample of this stage, and the relevant findings were calculated using Cronbach's alpha formula. The results of the Cronbach's alpha index of the variables of the current research model were reported as table 1:

Table 1. measure of internal consistency (Cronbach's alpha)

Variable name	Number of items	Cronbach's alpha	Reliability
Interloper	21	0.76	0.73
Strategies	14	0.77	0.75
Factors	13	0.72	0.72
Consequences	16	0.75	0.75
Background factors	18	0.79	0.79

According to Table 1, it can be seen that Cronbach's alpha calculated for all research variables was more than 0.7 and it was confirmed from this point of view.

Quantitative data analysis

In the quantitative part of the research, descriptive

statistics, confirmatory factor analysis, and structural equation modeling were used. In other words, at this stage, the relationships of each of the components extracted in the conceptual model were independently examined and then predicted simultaneously using the structural equation modeling method. To test the model presented in

the research, the path analysis test using structural equation modeling was used.

The steps of super composite implementation

In this research, in order to realize the qualitative model, the seven-step method of Sandelowski and Barroso (2007) was used as follows: First step: setting research questions; 1- What: The first step in the meta composite approach was to determine what would be studied. This step in this research included the following questions; 1- What are the characteristics of a leader in the form of an interactive leadership framework? 2- What are the characteristics of followers in the form of interactive leadership framework? 3- What are the characteristics of the situation in the form of interactive leadership framework? 4- In what situation are the three factors of the leadership process in the interactive framework of leadership? 2- Who defines this question regarding the studied society. 3- When (When) frame specifies the time range of the reviewed articles that are included. 4- The second step is the systematic review of

articles; the statistical population of the research was made up of all scientific documents and articles, databases and domestic and foreign publications in the field of transformational leadership and interactive leadership during the years 1990 to 2023. A total of 244 books and research articles related to this field were found from the two main keywords of transformational leadership and interactive leadership for searching in reliable domestic scientific databases as well as reliable foreign reference and information databases. The third step: searching and choosing suitable articles; Glynn's critical evaluation tool was used to select the appropriate articles and various features of the articles such as the title, abstract, content and quality of the research method were evaluated. Fourth step: extracting the results; the information of the articles and sources was classified based on their reference, including the author, along with the year of publication of the article and the indicators extracted from the studies. The obtained results were given in Table 2.

Table 2. Items and sources of model variables

Indicators	Source
Political factors	N. Achour, M. Miyajima, F. Pascale, F. D, A. (2)
Ecological situation	A.H. Aghapour, M. Yazdani, F. Jolai, M. Mojtahedi, (3)
Competitors	E. Ghanaatpisheh, H. Khankeh, G. Masoumi, (3)
Business challenges	S. Tong, H. Bambrick, P.J. Beggs, L, (2)
Globalization	A.J. Hertelendy, C. Howard, C. (3)
Deregulation	Z. Lokmic-Tomkins, (5)
Electronic commerce	K. Goniewicz, (26)
Rapidly changing technology	S.K. Wheat, K.L. Ebi (4)
The complexity of innovations	M.J. Eckelman, (2)
Dispersion of markets	H. Farahmandnia, (3)
Increasing social expectations	M.A. Alhallaf, H. Farhat, K. Goniewicz, (5)
Customers	H.M. Ali, J. Ranse, A. Roiko, C. Desha (6)
Dynamic environments	A. Camacho, (4)
Rapid changes in the environment	R. Graham, T. Woodhead, (3)
Being conscientious	A. Hutton, T.G. Veenema, K. Gebbie, (2)
Being reliable	J. Perez, (14)
Being a hard worker	H.M. Ali, J. Ranse, A. Roiko, C. Desha, (12)
Being motivated	A.M. Batt, W. Tavares, B. Williams (14)
Extroversion	C.J. Shuman, D.K. Costa (13)
Support from superiors	J. Farokhzadian, (8)
Participation in the leadership process	J. Farokhzadian (7)
Provide honest feedback	K. Goniewicz, M. A. Khorram-Manesh (5)
Creating a new perspective	M.A. Benevolenza, L. DeRigne (6)

Indicators	Source
Compilation and development of insights	J. Kotcher, E (32)
Responsiveness	M. Krägler, (33)
Cooperation	T.D. Shanafelt, (34)
Being motivated	X. Song, E. Zhao, D. Cao, Y. Yang,(35)
Having courage	S.H. Cook, N.E. Tsipis, J.A. Neumann, K.M. Andolsek, D.C. (2)
Having justice	Mohaghegh, M. Gholizadeh (9)
Having humility	D.H. Caro, , Int. J. Emerg. Manag. 12 (2) (8)
Having humanity	B. Schwartz (36)
Delegation of authority to employees	G. Gardner (38)
Having commitment	N. Johnson, W.W. Chin(39)
Having Accountability	J. Sukhera (37)

Fifth step: analysis and combination of qualitative findings; in this research, 53 final articles were selected based on previous studies. The data of previous final articles were analyzed with thematic analysis approach and an index was considered for all extracted information. Then, the authors examined the indicators and considering the concept of each of them, they were categorized as a similar concept; in this order, the concepts of the research were formed and the concepts were also categorized into a more general class called dimensions, and in total 3 dimensions and 5 concepts for the 73 indicators of this were discovered, categorized and tagged. The sixth step: control of extractive indicators; Cohen's kappa index was used to evaluate the agreement between two raters. The kappa coefficient is a number between 1 and +1, being close to 1 indicated direct agreement, values close to zero indicated disagreement between the two evaluators, values less than 0.4 indicated poor agreement, and values above 0.7 indicated good agreement. As can be seen in Table 6, using SPSS software, the significance value was 0.000 and the value of the calculated Kappa coefficient was 0.851, which was higher than the value of 0.7, which showed a good agreement between the two evaluators; therefore, due to the fact that the significant number was smaller than 0.5, the assumption of independence of the extracted indices was rejected. So, it can be claimed that the extraction of indicators had a good reliability.

What can be inferred from the results of this study was that all indicators were effective in the

transformational leadership model in the form of interactive leadership framework, but the degree of influence of each one was different. Shannon's entropy method was used to determine the weight of the indicators. In this method, first, the indicators corresponding to each source were counted in the form of frequency, then using the information load of each concept, the degree of importance of each was calculated.

Delphi experts

In the validation phase of the initial model (dimensions, concepts, and indicators of the transformational leadership model in the form of an interactive leadership framework), twelve academic experts were provided and their opinions were received regarding the obtained indicators of the concepts and dimensions of the model. In the second round of Delphi, the experts' opinions about the model and the titles of the indicators were modified according to the hospitals of Zanzan province, and the second edition of the model was made and it was provided to the experts for the third round of Delphi. In the third stage of Delphi, the analysis of the model was done, and the comments and the third and final revision of the transformative leadership model were made in the form of an interactive framework of leadership in hospitals in Zanzan province. The most important criterion for the selection of experts in the first, second, and third stages of Delphi was access and experience with the topic of transformational leadership model in the form of an interactive

leadership framework in hospitals in Zanjan province. In the quantitative part, the researcher, after reviewing the materials and content based on upstream documents, interviews, theoretical foundations and background and evaluating the necessary signs based on the meta-composite approach, the qualitative model was obtained and repaired. The content validity ratio was a method of measuring the validity of the questionnaire designed by Lavshe. In order to calculate this ratio, the opinions of experts were used in the field of the desired test content. First, the objectives of the test were explained to the participants and knowledgeable and expert people (who were supposed to examine the questions), and the operational definitions related to the content of the questions were stated. They were then asked to rate

each question on a three-point Likert scale: • The subject was essential • The item was useful but not necessary • The object was not necessary based on the number of experts who evaluated the questions, and the minimum acceptable CVR value was determined according to the table below. Questions for which the calculated CVR value was lower than the desired value, and according to the number of experts evaluating the question, had to be discarded from the test. Because they were based on CVR, they did not have acceptable validity. In the current research, 12 experts were surveyed and the index calculated for all the items of the present research was calculated as 0.81, which was more than 0.56 and was confirmed from this point of view. The opinion of specialists and experts in the field of CVR was shown in Table 7.

Table 3. Content Validity Ratio; CVR

<i>concepts</i>	<i>It is not necessary at all</i>	<i>It is Useful but not necessary</i>	<i>Essential</i>	CVR
Political factors	0	1	11	0.83
Ecological situation	0	0	12	1
Competitors	2	2	10	0.66
Business challenges	2	0	11	0.83
globalization	0	0	12	1
Deregulation	0	2	10	0.66
Electronic commerce	2	0	10	0.66
Rapidly changing technology	2	2	10	0.66
The complexity of technological innovations	1	0	11	0.83
Dispersion of markets	0	0	12	1
Increasing social expectations	0	1	11	0.83
Customers	0	0	12	1
Dynamic environments	1	1	10	0.66
Rapid changes in the environment	2	0	10	0.66
Being conscientious	1	1	10	0.66
Being reliable	0	0	12	1
Being a hard worker	2	0	10	0.66
Being motivated	1	1	10	0.66
Being extroversion	2	0	10	0.66
Support from superiors	1	1	10	0.66
Participation in the leadership process	1	0	11	0.83
constructive and honest feedback	0	0	12	1
Creating a new perspective	0	1	11	0.83
Compilation and development of insights	0	0	12	1
Being responsiveness	1	1	10	0.66
Having cooperation	2	0	10	0.66
Being motivated	1	1	10	0.66
Having courage	0	0	12	1

<i>concepts</i>	<i>It is not necessary at all</i>	<i>It is Useful but not necessary</i>	<i>Essential</i>	<i>CVR</i>
Having justice	0	0	12	1
Having humility	0	1	11	0.83
Having humanity	0	0	12	1
Delegation of authority to employees	1	1	10	0.66
Having commitment	1	1	10	0.66
Having Accountability	2	0	10	0.66

According to the opinions of experts and specialists and relative coefficients of content obtained, Lavshe coefficient (relative coefficient of content) was obtained for all the codes higher than 0.56, so all the codes are approved.

The output of Kolmogorov-Smirnov (K-S) test shows whether or not the researchers can use parametric tests in data analysis. If the data variance is large enough, this test will show that the data cannot be from a particular distribution such as normal, Poisson, exponential, or uniform. As a result, parametric tests cannot be used for data analysis and non-parametric tests should be used. For the normality test, data were analyzed in SPSS software, and the results indicated the normality of the research data. Factor analysis related to the situation variable based on the above model found that the factor analysis of Ali's factors was approved

Cronbach's alpha Cronbach's alpha is used to

measure the internal consistency of the questionnaire. Thus, with the increase of the internal consistency, the alpha coefficient of the questionnaire also increases, which means that if the items have the most significant relationship.

According to the difference in the table, it can be seen that Cronbach's alpha and composite reliability calculated for all research variables was more than 0.7 and it was confirmed from this point of view.

As Table 4 shows, the measurement model also had a good fit. Checking the current and desired situation, this part of the research was done with the aim of comparing the current state of transformative leadership model in the form of the interactive leadership framework of Zanzan hospital employees with the desired state of the transformational leadership model in the form of the interactive leadership framework obtained in the research.

Table 4. Wilcoxon signed-rank test

Variables	P value	Z	Mean difference	Average		Number of samples	
				Desirable interactive framework	Existing interactive framework		
Political factors	0.00	-15.47	-0.978	4.2338	3.255	279	23.109
Ecological situation	0.00	-15.42	-0.978	4.2278	3.249	279	23.13
Competitors	0.00	-15.453	-0.978	4.2324	3.254	279	23.11
Business challenges	0.00	-15.38	-0.978	4.2265	3.248	279	23.14
Globalization	0.00	-15.36	-0.978	4.2338	3.255	279	23.12
Deregulation	0.00	-15.47	-0.978	4.2278	3.249	279	23.19
Electronic commerce	0.00	-15.42	-0.978	4.2324	3.254	279	23.08
Rapidly changing technology	0.00	-15.453	-0.978	4.2265	3.248	279	23.109
The complexity of technological innovations	0.00	-15.38	-0.978	4.2338	3.255	279	23.13
Dispersion of markets	0.00	-15.36	-0.978	4.2278	3.249	279	23.11
Increasing social expectations	0.00	-15.47	-0.9784	4.232	3.254	279	23.14
Customers	0.00	-15.42	-0.978	4.226	3.248	279	23.12
Dynamic environments	0.00	-15.453	-0.978	4.233	3.255	279	23.19
Rapid changes in the environment	0.00	-15.38	-0.978	4.227	3.249	279	23.08
Being conscientious	0.00	-15.36	-0.978	4.232	3.254	279	23.109
Being Reliable	0.00	-15.47	-0.978	4.226	3.248	279	23.13
Being a hard worker	0.00	-15.42	-0.978	4.233	3.255	279	23.11
Being motivated	0.00	-15.453	-0.978	4.227	3.249	279	23.14
Being extroverted	0.00	-15.38	-0.9784	4.232	3.254	279	23.12
Support from superiors	0.00	-15.36	-0.978	4.226	3.248	279	23.19
Participation in the leadership process	0.00	-15.47	-0.978	4.233	3.255	279	23.08
Providing constructive and honest feedback	0.00	-15.42	-0.978	4.227	3.249	279	23.109
Creating a new perspective	0.00	-15.453	-0.978	4.232	3.254	279	23.13
Compilation and development of insights	0.00	-15.38	-0.978	4.226	3.248	279	23.11
Responsiveness	0.00	-15.36	-0.978	4.233	3.255	279	23.14
cooperation	0.00	-15.47	-0.978	4.227	3.249	279	23.12
Being motivated	0.00	-15.42	-0.978	4.232	3.254	279	23.19
Having courage	0.00	-15.453	-0.978	4.226	3.248	279	23.109
Having justice	0.00	-15.47	-0.978	4.233	3.255	279	23.13
Having humility	0.00	-15.42	-0.978	4.233	3.255	279	23.11
Having humanity	0.00	-15.453	-0.978	4.227	3.249	279	23.14
Delegation of authority to employees	0.00	-15.38	-0.978	4.232	3.254	279	23.12
Having commitment	0.00	-15.36	-0.978	4.226	3.248	279	23.19
Having accountability	0.00	-14.54	-0.978	4.226	3.248	279	23.08

In this research, 53 final articles were selected based on previous studies. The data of previous final articles were analyzed with thematic analysis approach, and an index was considered for all extracted information. Then, he examined the indicators and considering the concept of each of them, they were categorized as a similar concept. In this order, the concepts of the research were formed and the concepts were also categorized into a more general class called dimensions. In total, 3 dimensions and 5 concepts for the 73 indicators of this research was discovered, categorized, and tagged. The findings in this step showed that such a systematic study had not been conducted in past studies, and each of the studies only paid attention to a specific aspect of the dimensions of the transformational leadership model in the form of an interactive leadership framework. None of the previous studies had a coherent and systematic framework. Table 17 shows the extracted final indicators related to each dimension and concept.

Discussion

The averages obtained from the two situations in all the components showed that the desired situation was much higher than the existing situation. Referring to Z test, which was significant at an error level of less than 0.01, it can be said that the difference between the current situation and the desired situation was statistically significant with a confidence of 0.99. This result indicated the rejection of Ho's assumption that the current and desired indicators were equal. In other words, the current situation was different from the desired situation in the transformational leadership model in the form of an interactive leadership framework for Zanzan hospital employees. One of the important and influential factors of the success of an organization is how to apply management and effective leadership styles of the managers of that organization. There are managers who can choose different styles in directing human resources. Their appropriate behavior patterns in any organization cause strong morale and motivation among employees, and subsequently, increase the motivation of employees, their level of satisfaction,

and the level of productivity. In today's era, the constant concern of all managers of organizations is the strategic management of organizational changes and developments and improving the efficiency and performance of human resources. Transformational leadership style as a modern style in managing an organization has left a positive impact in creating major organizational changes in the world, and on the other hand, by developing the capabilities of managers' followers. Such leaders avoid slogans and are pragmatic. They welcome change and love their work. Transformational leaders align employees with organization's goals and have systemic thinking. Entrepreneurial spirit, use of employees' ideas, and professional spirituality are other characteristics of these leaders. What challenges the transformational behavior of leaders and the efficiency of followers is the existence of anomie in the local organization and centralism. Furthermore, if the middle managers feel powerless and ineffective, the desire for transformation among them will fade. Some also believe that if the powers of managers in different fields increase in organizations, the efficiency of followers is strengthened. The leadership style of transformational leaders in organizations improves organizational social capital, develops organizational citizenship behavior, organizational behavior excellence, organizational flexibility, etc., which guarantees the efficiency of followers and desirable changes in the organization. It can be concluded that the adaptive capacity of the organization is the anchor of transformational leadership. The mentioned concept means that transformational leaders have the power and ability to adapt to organizational changes and transformations. This is because they draw the organizational vision and support change and make organizational learning the center of their organizational activities. In the end, it can be said that transformational leaders use techniques such as effective learning, reward system, and organizational services empowerment to influence organizational changes and improve the efficiency of followers. The result of this research was consistent with the findings (7,8,11,13,9). As it

was said, transformational leadership's real-time problems define new criteria, create different understandings, and shape subordinates' behavior to effectively achieve organizational goals. According to Bass and Auliou, transformational leadership needs three components or factors as its constituent elements to be implemented. These factors include: followers, status and characteristics of transformational leadership. Based on the results obtained in this research, the analysis of the data obtained from the study of the conducted studies (qualitative part) indicated that there were a total of 73 primary propositions arising from meaningful units, and from these primary codes, all the codes were identified and extracted.

The results of the evaluation showed that the observed correlation between the examined components and the transformative leadership variable in the hospitals of Zanjan province was quite significant. Therefore, it can be concluded that the model examined in this research had a sufficient level of significance to be used as a guide to increase the transformation of the organization by relying on the role of interactive leadership in the hospitals of Zanjan province. In addition, in the evaluation of the final model presented in relation to the investigated indicators and components in order to explain and design a transformational leadership model based on the interactive leadership of managers and employees of hospitals in Zanjan province, the results showed that the investigated variables were able to acceptably increase the variable of transformational leadership of hospital managers and employees. As it was observed, the factor load of all investigated variables was greater than 0.3. Therefore, they had a favorable relationship with the variable of interactive leadership. The obtained results showed that among the main components under investigation, the follower component with a factor load of 0.87 had the most explanatory power regarding the role of transformative leadership based on the interactive leadership of managers and employees of hospitals in Zanjan province. After that, the characteristic

component of transformational leadership with a factor load of 0.84% and the situation component with a factor load of 0.81 were the next explanatory orders.

Conclusion

Based on the findings of the research, it is suggested that transformational leaders should strengthen organizational social capital by improving horizontal interactions between colleagues, building trust, and attract the participation and cooperation of employees in decision-making in order to adapt to organizational changes and developments. Transformational leaders can strengthen the spirit of criticality among themselves and their colleagues in the organization. In order to influence organizational changes, they should try to formulate organizational vision, values, short-term and long-term goals and missions of the organization, and the conditions and benefits of the organization to all employees during a sincere training session. In order to increase organizational performance, transformational leaders should support organizational learning by holding specialized conferences and meetings, encouraging employees to continue their education, training employees, updating educational content, and updating existing topics in the hospital. Empowering the human force by involving employees in important organizational decisions, providing a platform for ideas to emerge in formal and informal organizational meetings. It is suggested that transformational leaders use the performance-based reward system more to increase organizational innovation and productivity. In this regard, creative and innovative employees with transformative ideas should be celebrated on different occasions. Models based on leadership characteristics, which are currently implemented in many organizations, should be planned and implemented with strict supervision. Also, since the characteristics of the followers were found to be very important in this research, it is therefore recommended that this issue be compiled in the framework of a cultural guideline in the upstream

documents and communicated to these organizations for the purpose of implementation in hospitals in order to strengthen the transformation of managers and employees.

Emergence of transformational behaviors by managers of hospitals in Zanjan province is a manifestation of transformational leadership functions. An example of such behaviors can be seen in the form of changing weak managers as soon as possible, maintaining talented and capable managers, quickly and timely solving the problems of the organization's human resources, changing the status of employees contracts, and changing the administrative system. The managers of hospitals in Zanjan province should adapt with organizational changes and transformations, strengthen organizational social capital by improving horizontal interactions between colleagues, build trust, and attract employees' participation and cooperation in decisions, etc. In addition, the transformational leaders should strengthen the spirit of criticism among themselves and the colleagues of the organization. What the current study has proposed as the functions of transformational leadership and the literature has also addressed it to some extent, and is carrying out transformational actions and behaviors, transparency of the organizational vision, and support for organizational learning. Obviously, such functions have been exemplified in the case of hospitals in Zanjan province and have enriched the research literature. Resources and facilities, including facilitating conditions in relation to the functions of transformational leadership, were not addressed in the research literature. This study suggests that the limitations in the financial fields, recruitment of human resources and educational equipment are among the most important indicators that the action/reactions adopted by transformational leaders are effective. In addition, the professional characteristics of managers and leaders of hospitals in Zanjan province, such as pragmatism, core competencies, acceptance of change and transformation, strategic guidance of human resources, emphasis on the suggestion system,

attachment to work, having a vision, emphasis on quality rather than quantity, promotion of values collectivism, entrepreneurial and innovative spirit, and professional spirituality are suggested as indicators to measure these characteristics. Obviously, in none of the previous studies, this range of indicators related to the characteristics of managers in the implementation of transformational strategies was not included. The set of facilitating conditions that influenced the actions/reactions of transformational leaders were the politicization of managers, organizational restrictions in terms of upper-level documents, and the lack of power in managers, which the research literature had not addressed. This study suggests that in the dimension of politicization, transformational leaders should be considered from the point of view of dealing with marginal issues and the occurrence of political behavior in the organization, because these indicators can be considered as a factor for the non-emergence of transformational behaviors. Another aspect of increasing knowledge in this research was the identification of organizational limitations, such as limitations resulting from regulations and organizational guidelines, and consequently, not having the necessary authority as a result of regulatory limitations. On the other hand, the results suggested that not taking advantage of the opinions of managers in the organizational hierarchy and not paying attention to the proposals presented by managers evokes a sense of powerlessness in them, which is contrary to the basic foundations needed by transformational leaders in the emergence of transformational behaviors. This was consistent with the literature. The results showed that transformational leaders in hospitals in Zanjan province should adopt strategies of professional self-improvement, improve the quality of organizational services, empower human resources, promote work conscience in employees, establish effective reward systems, and transform organizational behaviors. Some of these indicators have been discussed in the literature, but the suggestion of this research is to use all the calculated indicators in order to better understand the functions of transformational leaders. The

research literature showed the consequences of the transformational behaviors of leaders as mental motivation, attracted internal cooperation, and increased organizational trust, and citizenship behavior. However, this study suggests that indicators such as quality and quantity of organizational relationship network, agent-based management, explanation of organizational benefits, organizational flexibility, organizational social capital, liquidity, formality of organizational structure, awareness, and excellence of organizational behavior should also be used to evaluate the results. In fact, these indicators are the contribution of the paradigm model in the consequences section.

This research was conducted with the aim of providing a transformational leadership model based on interactive leadership. As it was determined in the study process, most of the previous studies focused on the use of purely quantitative approaches and only on some of the transformational leadership, and the underlying factors of the transformational leadership and its constituent elements were neglected. This study tried to fill the existing research gap. Most of the previous studies focused on transformational leadership in its general sense, and only few studies dealt with the elements of transformational leadership. Therefore, the existing literature in this field was not rich. In addition, in this research, in addition to the elements of transformational leadership and actions related to it, the consequences of transformational leadership were also considered. This is despite the fact that in previous studies, this problem was not dealt with from a systematic point of view, and therefore, the literature had a research gap in this sense. In addition, the role and effects of variables such as environmental complexity, dynamic competition, environmental uncertainties, and the need for two pillars of the organization on the transformational leadership functions have not been considered in the current research. While these variables can affect the mentioned elements, another limitation of this research was related to the generalizability

of the results. This study was conducted in the hospitals of Zanjan province, and as a result, the native model designed was unique to the hospitals of Zanjan province. However, the results cannot be generalized to organizations.

Ethical Considerations

This article is extracted from a student's thesis with tracking code 1521053, which received ethical approval from the Research Council of Islamic Azad University, Central Tehran Branch.

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Authors' Contributions

S.A and D.Gh were responsible for the research design. S.a and D. Gh analyzed data. S.A wrote the article. S.A was responsible for the final content. All authors read and approved the final manuscript.

Conflict of Interest

All authors declared no conflicts of interest.

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References

- 1.N. Achour, M. Miyajima, F. Pascale, F. D, A. Price, Hospital resilience to natural hazards: classification and performance of utilities, *Disaster Prevention and Management* 23 (1) (2014) 40–52 <https://doi.org/10.1108/dpm-03-2013-0057>, Article.
- 2.A.H. Aghapour, M. Yazdani, F. Jolai, M. Mojtahedi, Capacity planning and reconfiguration for disaster-resilient health infrastructure, *J. Build. Eng.* 26 (2019)<https://doi.org/10.1016/j.jobe.2019.100853>, Article 100853.
- 3.E. Ghanaatpisheh, H. Khankeh, G. Masoumi, Challenges for hospital resilience in emergencies and disasters: a qualitative study in Iran [article], *J. Clin. Diagn. Res.* 13 (9) (2019) LC1–LC8, <https://doi.org/10.7860/jcdr/2019/41539.13120>.

4. A.J. Hertelendy, C. Howard, C. Sorensen, J. Ranse, E. Eboeime, S. Henderson, J. Tochkin, G. Ciottone, Seasons of smoke and fire: preparing health systems for improved performance before, during, and after wildfires, *Lancet Planet. Health* 8 (8) (2024) e588–e602.
5. S. Tong, H. Bambrick, P.J. Beggs, L. Chen, Y. Hu, W. Ma, W. Steffen, J. Tan, Current and future threats to human health in the Anthropocene, *Environ. Int.* 158
6. Z. Lokmic-Tomkins, D. Bhandari, C. Bain, A. Borda, T.C. Kariotis, D. Reser, Lessons learned from natural disasters around digital health technologies and delivering quality healthcare, *Int. J. Environ. Res. Publ. Health* 20 (5) (2023) 4542, <https://doi.org/10.3390/ijerph20054542>.
7. M. Goniewicz, A. Khorram-Manesh, D. Timler, A.M. Al-Wathinani, K. Goniewicz, Hospital disaster preparedness: a comprehensive evaluation using the hospitalsafety index, *Sustainability* 15 (17) (2023) 13197, <https://doi.org/10.3390/su151713197>.
8. J.J. Hess, N.A. Errett, G. McGregor, T. Busch Isaksen, Z.S. Wettstein, S.K. Wheat, K.L. Ebi, Public health preparedness for extreme heat events, *Annu. Rev. Publ. Health* 44 (1) (2023) 301–321, <https://doi.org/10.1146/annurev-publhealth-071421-025508>.
9. J.D. Sherman, A.J. MacNeill, P.D. Biddinger, O. Ergun, R.N. Salas, M.J. Eckelman, Sustainable and resilient health care in the face of a changing climate, *Annu. Rev. Publ. Health* 44 (1) (2023) 255–277, <https://doi.org/10.1146/annurev-publhealth-071421-051937>.
10. M. Kiarsi, M. Amiresmaili, M.R. Mahmoodi, H. Farahmandnia, N. Nakhaee, A. Zareiyani, H. Aghababaeian, Heat waves and adaptation: a global systematic review, *J. Therm. Biol.* 103588 (2023).
11. N.A. AlDulijand, A.M. Al-Wathinani, M.A. Abahussain, M.A. Alhallaf, H. Farhat, K. Goniewicz, Sustainable healthcare resilience: disaster preparedness in Saudi Arabia's eastern province hospitals, *Sustainability* 16 (1) (2023) 198, <https://doi.org/10.3390/su16010198>.
12. H.M. Ali, J. Ranse, A. Roiko, C. Desha, Enabling transformational leadership to foster disaster-resilient hospitals, *Int. J. Environ. Res. Publ. Health* 20 (3) (2023) 1–18, <https://doi.org/10.3390/ijerph20032022>.
13. M. Khalil, H. Ravaghi, D. Samhouri, J. Abo, A. Ali, H. Sakr, A. Camacho, What is “Hospital Resilience”? A scoping review on conceptualization, operationalization, and evaluation, *Front. Public Health* (2022), <https://doi.org/10.3389/fpubh.2022.1009400>.
14. UNDRR, Sendai framework terminology on disaster risk reduction, United Nations Office for Disaster Risk Reduction (2016) Retrieved 01/10/2023 from <https://www.undrr.org/terminology>.
15. World Health Organization, Western Pacific Regional Framework for Action for Disaster Risk Management for Health, Western Pacific Region., 2015. https://iris.who.int/bitstream/handle/10665/208200/9789290617082_eng.pdf?sequence=1. (Accessed 30 September 2023).
16. R. Graham, T. Woodhead, Leadership for continuous improvement in healthcare during the time of COVID-19, *Clin. Radiol.* 76 (1) (2021) 67–72, <https://doi.org/10.1016/j.crad.2020.08.008>.
17. A. Hutton, T.G. Veenema, K. Gebbie, Review of the International Council of Nurses (ICN) framework of disaster nursing competencies, *Prehospital Disaster Med.* 31 (6) (2016) 680–683, <https://doi.org/10.1017/S1049023X1600100X>.
18. J. Perez, Leadership in healthcare: transitioning from clinical professional to healthcare leader, *J. Healthc. Manag.* 66 (4) (2021) 280–302, <https://doi.org/10.1097/JHM-D-20-00057>.
19. H.M. Ali, J. Ranse, A. Roiko, C. Desha, Healthcare workers' resilience toolkit for disaster management and climate change adaptation, *Int. J. Environ. Res. Publ. Health* 19 (19) (2022) 12440, <https://doi.org/10.3390/ijerph191912440>.
20. A.M. Batt, W. Tavares, B. Williams, The development of competency frameworks in healthcare professions: a scoping review, *Adv. Health Sci. Educ.* 25 (2020) 913–987, <https://doi.org/10.1007/s10459-019-09946-w>.
21. C.J. Shuman, D.K. Costa, Stepping in, stepping up, and stepping out: competencies for intensive care unit nursing leaders during disasters, emergencies, and outbreaks, *Am. J. Crit. Care* 29 (5) (2020) 403–406, <https://doi.org/10.4037/ajcc2020421>.
22. J. Farokhzadian, P. Mangolian Shahrabaki, H. Farahmandnia, G. Taskiran Eskici, F. Soltani Goki, Nurses' challenges for disaster response: a qualitative study, *BMC Emerg. Med.* 24 (1) (2024) 1,

- <https://doi.org/10.1186/s12873-023-00921-8>.
23. K. Goniewicz, M. Goniewicz, A. Włoszczak-Szubzda, F.M. Burkle, A.J. Hertelendy, A. Al-Wathinani, M.S. Molloy, A. Khorram-Manesh, The importance of pre-training gap analyses and the identification of competencies and skill requirements of medical personnel for mass casualty incidents and disaster training, *BMC Publ. Health* 21 (1) (2021) 114, <https://doi.org/10.1186/s12889-021-10165-5>.
 24. M.A. Benevolenza, L. DeRigne, The impact of climate change and natural disasters on vulnerable populations: a systematic review of literature, *J. Hum. Behav.Soc. Environ.* 29 (2) (2019) 266–281.
 25. J. Kotcher, E. Maibach, J. Miller, E. Campbell, L. Alqodmani, M. Maiero, A. Wyns, Views of health professionals on climate change and health: a multinational survey study, *Lancet Planet. Health* 5 (5) (2021) e316–e323.
 26. C. Förster, S. Duchek, S. Geithner, M. Krägler, Developing an integrated framework of healthcare leaders' resilience, *Review of Managerial Science* 17 (5) (2023)1765–1788.
 27. C.P. West, L.N. Dyrbye, C. Sinsky, M. Trockel, M. Tutty, L. Nedelec, Resilience and burnout among physicians and the general US working population, *JAMA Netw. Open* 3 (7) (2020) e209385.
 28. H. Chu, B. Qiang, J. Zhou, X. Qiu, X. Yang, Z. Qiao, X. Song, The impact of transformational leadership on physicians' performance in China: a cross-level mediation model, *Front. Psychol.* 12 (2021) 586475.
 29. C.W. Hargett, J.P. Doty, J.N. Hauck, A.M. Webb, S.H. Cook, N.E. Tsipis, J.A. Neumann, K.M. Andolsek, D.C. Taylor, Developing a model for effective leadership in healthcare: a concept mapping approach, *J. Healthc. Leader* (2017) 69–78.
 30. E. Kakemam, Z. Liang, A. Janati, M. Arab-Zozani, B. Mohaghegh, M. Gholizadeh, Leadership and management competencies for hospital managers: a systematic review and best-fit framework synthesis, *J. Healthc. Leader* (2020) 59–68, <https://doi.org/10.2147/JHL.S265825>.
 31. L.P.-I. Frank, A Qualitative Descriptive Study Exploring The Understanding And Practice Of Leadership In Hospitals during COVID-19 Grand Canyon University, 2023.
 32. D.H. Caro, Towards transformational leadership: the nexus of emergency management systems in Canada, *Int. J. Emerg. Manag.* 12 (2) (2016) 113–135, <https://doi.org/10.1504/IJEM.2016.076631>.
 33. Y. Khan, T. O'Sullivan, A. Brown, S. Tracey, J. Gibson, M. Génereux, B. Henry, B. Schwartz, Public health emergency preparedness: a framework to promote resilience, *BMC Publ. Health* 18 (1) (2018) 1–16.
 34. J.A. Luft, S. Jeong, R. Idsardi, G. Gardner, Literature reviews, theoretical frameworks, and conceptual frameworks: an introduction for new biology education researchers, *CBE-Life Sci. Educ.* 21 (3) (2022) rm33, <https://doi.org/10.1187/cbe.21-05-0134>.
 35. A. Schwarz, M. Mehta, N. Johnson, W.W. Chin, Understanding frameworks and reviews: a commentary to assist us in moving our field forward by analyzing our past, *ACM SIGMIS - Data Base: the DATABASE for Advances in Information Systems* 38 (3) (2007) 29–50 [10.1145/1278253.1278259](https://doi.org/10.1145/1278253.1278259).
 36. J. Sukhera, Narrative reviews: flexible, rigorous, and practical, *J Grad Med Educ* 14 (4) (2022) 414–417, <https://doi.org/10.4300/jgme-d-22-00480.1>.
 37. C.G. Pickvance, Four varieties of comparative analysis, *J. Hous. Built Environ.* 16 (2001) 7–28, <https://doi.org/10.1023/A:1011533211521>.
 38. C. Tilly, *Big Structures, Large Processes, Huge Comparisons*, 1984.
 39. Y. Botma, G.H. Van Rensburg, I.M. Coetzee, T. Heyns, A conceptual framework for educational design at modular level to promote transfer of learning, *Innovat. Educ. Teach. Int.* 52 (5) (2015) 499–509, 2013. 866051