

ORIGINAL ARTICLE

The Impact of Environmentally-Specific Transformational Leadership on Green Innovative Behavior: The Mediating Role of Green Organizational Identity and the Moderating Role of Organizational Embodiment

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ABSTRACT

Global environmental concerns and increasing social pressure to conserve natural resources for future generations have compelled organizations to focus more on their environmental performance by adopting sustainable practices. This study aims to investigate the effect of environmentally-specific transformational leadership on green innovative behavior, with the mediating roles of green organizational identity and organizational embodiment, at Shahid Chamran Hospital in Isfahan. The research is applied in purpose and descriptive-correlational in methodology. The statistical population consisted of 170 managers and staff members across various departments of the hospital. Using Cochran's formula, a sample of 117 individuals was selected. Data analysis and hypothesis testing were conducted through structural equation modeling (SEM) using Smart PLS and SPSS software. Construct validity and reliability tests were conducted to ensure the quality of the questionnaire. The findings revealed a significant direct effect of green transformational leadership on green innovative behavior. However, the mediating effect of green organizational identity and the moderating role of organizational embodiment in this relationship were not supported. Furthermore, green transformational leadership did not significantly influence green organizational identity, nor did organizational identity have a significant impact on green innovative behavior. These results suggest that if Chamran Hospital implements green transformational leadership initiatives to promote pro-environmental behavior among its employees, it can contribute to creating a more environmentally sustainable workplace, thereby reducing ecological harm and promoting a healthier environment.

KEYWORDS

Organizational Embodiment, Green Transformational Leadership, Green Innovative Behavior, Green Organizational Identity.



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تأثیر رهبری تحول‌آفرین خاص محیط‌زیستی بر رفتار نوآورانه سبز: نقش میانجی هویت سازمانی سبز و نقش تعدیل‌کننده تجسم سازمانی

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چکیده

نگرانی جهانی در مورد محیط‌زیست، فشارهای اجتماعی برای حفظ محیط‌زیست و منابع برای نسل‌های آینده، شرایطی را ایجاد کرده است که سازمان‌ها را وادار کرده تا با اتخاذ رویه‌هایی به عملکرد محیط‌زیستی خود توجه کنند. لذا پژوهش حاضر با هدف بررسی تأثیر رهبری تحول‌آفرین خاص زیست‌محیطی بر رفتار نوآورانه سبز با نقش میانجی هویت سازمانی سبز و تجسم سازمانی در بیمارستان چمران انجام گرفته است و از لحاظ هدف، کاربردی و از نظر روش، توصیفی و از نوع همبستگی بوده است. جامعه آماری این تحقیق ۱۷۰ نفر از مدیران و کارکنان بخش‌های بیمارستان شهید چمران شهر اصفهان است که بر اساس فرمول کوکران حجم نمونه ۱۱۷ نفر محاسبه شد و به‌منظور تحلیل داده‌ها و آزمون فرضیه‌ها، از مدل معادلات ساختاری و برای انجام این تحلیل‌ها از نرم‌افزارهای SmartPLS و SPSS استفاده شده است. سنجش روایی پرسشنامه نیز، از طریق روایی سازه انجام شد. نتایج به‌دست‌آمده بیانگر وجود تأثیر معنادار رهبری تحول‌آفرین سبز بر رفتارهای سبز نوآورانه بود. همچنین نتایج نشان از عدم تأثیر رهبری تحول‌آفرین سبز بر رفتارهای سبز نوآورانه با نقش میانجی هویت سازمانی، رهبری تحول‌آفرین سبز بر رفتارهای سبز نوآورانه با نقش تعدیل‌گر تجسم سازمانی، رهبری تحول‌آفرین سبز بر هویت سازمانی و هویت سازمانی بر رفتارهای سبز نوآورانه بود. در صورتی که بیمارستان چمران بتواند رفتارهای سبز کارکنان خود را از طریق طراحی برنامه‌های رهبری تحول‌آفرین سبز، تقویت کند می‌تواند محیطی سازگار با محیط‌زیست داشته باشد که به کاهش اثرات منفی بر محیط‌زیست و در نتیجه داشتن محیط‌زیستی سالم منجر شود.

واژه‌های کلیدی

تجسم سازمان، رهبری تحول‌آفرین سبز، رفتار نوآورانه سبز، هویت سازمانی.



Introduction

The rapid growth of the global population has led to the excessive consumption of the Earth's natural resources, consequently posing a serious threat to the planet. Therefore, individuals must seek more sustainable ways to protect these resources and share them responsibly (Anwar & Bashir 2017). To achieve this, it is essential to first identify the factors that endanger the environment and work to reduce their impacts. For this reason, environmental issues have become a global concern for many individuals and organizations (Adriana et al., 2020). Since the 1990s, green human resource management (GHRM) has been recognized as one of the key approaches to achieving sustainable development (Roscoe et al., 2019). GHRM promotes greater awareness, learning, communication, information sharing, and interaction among employees regarding environmental issues and ecological factors (Jia et al., 2018). One type of leadership that significantly influences environmental outcomes is green transformational leadership (GTL). Among various leadership styles, transformational leadership is characterized by the creation of an innovative climate, the ability to inspire and motivate colleagues, and the encouragement of self-confidence or alignment with the leader's vision—all of which impact organizational innovation and performance (Boehm et al., 2015). Green transformational leaders possess a broad perspective on the current state of organizations and play a significant role in shaping their future direction (Arshad, 2020). This leadership style reflects the core values and beliefs of top management and plays a pivotal role in promoting green human resource management. Green transformational leadership fosters environmentally responsible behavior among employees and positively affects green human resource management practices such as training, development, and recruitment. Furthermore, it enhances employees' capabilities, motivates them, and creates opportunities in the realm of environmental management (Sun et al., 2022). These leaders exert influence by inspiring motivation, stimulating employees' thinking, promoting managerial encouragement, support,

and supervision, enhancing employees' environmental behaviors, and facilitating the design of environmentally friendly products while reducing resource consumption and pollution (Mazzelli et al., 2019; Singh et al., 2020). Transformational leaders also play a key role in fostering innovation within organizations, thereby influencing market success as well as innovation in products and services (Gumusluoglu & Ilsev, 2009). According to Xie et al. (2019), green innovation involves the development of products and the implementation of new technologies that support environmental sustainability by helping organizations achieve their environmental goals. These innovations enhance productivity and strengthen company credibility by reducing environmental impacts throughout the production process and the product lifecycle. Ultimately, they contribute to gaining a competitive advantage, which is among the most significant benefits.

Green innovation behavior (GIB) refers to the introduction of any new or improved product (or service), process, marketing solution, or organizational change that minimizes the use of natural resources—including energy, materials, land, and water—and reduces the emission of harmful substances (Ghisetti et al., 2017). Employees' green innovation behavior also contributes to environmental protection by generating new ideas, adopting innovative methods, or introducing new technologies, which in turn promote environmental sustainability in the workplace—or potentially disrupt it (Ones & Dilchert, 2012). In this context, green transformational leaders help employees perceive that their leaders encourage green innovation behavior. This, in turn, enables employees to gain approval from leaders and receive both tangible and intangible rewards (Li et al., 2020). Overall, green transformational leadership communicates the company's environmental goals to employees, inspires their enthusiasm for environmental protection, and aligns employees' environmental awareness with the organization's objectives. As a result, employees better understand and recognize green innovation behaviors within the workplace, actively engaging in green innovative behaviors that contribute to the

organization's green development (Cohen, 2007).

One factor influencing green innovative behaviors is green organizational identity (GOI), which reflects the alignment between the individual and the organization in their efforts to protect the environment (Xing et al., 2019). From a cognitive perspective, organizational identity refers to an individual's cognitive process of feeling a sense of membership and belonging within an organization, representing the stability of both the individual and the organization in terms of shared values (Ashforth et al., 1989). Organizational members, particularly leaders, have the ability to reshape interpretations or promote new conceptualizations of identity in response to environmental changes (Scott & Lane, 2000). Organizational identity also plays a critical role in environmental management and protection, as it is collectively constructed by members to give meaning to their behaviors. It reflects the extent to which employees internalize the organization's values and goals (Chen & Chang, 2013). When employees have a strong organizational identity, they are more likely to actively demonstrate green innovative behaviors.

The term supervisor organizational embodiment (SOE) refers to employees' perception of how much their leader embodies the organization's values and norms, reflecting the degree to which employees identify their leaders with the organization (Costa et al., 2022). In practice, not all employees view the leader as the representative of the organization, and there are variations in how employees perceive this relationship. Employees who perceive high organizational embodiment tend to see their supervisor as sharing values, motivations, and goals similar to those of the organization. As a result, they interpret the supervisor's compliments or criticisms as being praise or recognition from the organization and consider the supervisor's statements about organizational goals and objectives as accurate and definitive. Conversely, employees with a low perception of organizational embodiment are more likely to view the supervisor as acting on their own behalf, and the relationship with the supervisor is less influential in guiding their

connection to the organization. Consequently, these employees perceive praise or criticism primarily as coming from the supervisor, rather than the organization, and view the supervisor's statements on organizational goals and performance guidelines as ambiguous. Therefore, organizational embodiment plays a key role in connecting relationships between leaders, employees, and the organization, providing a clearer understanding of how the leader-employee relationship influences the employee-organization dynamic (Eisenberger et al., 2010). Costa et al. (2022) argue that organizational embodiment positively moderates the relationship between ethical leadership and employees' organizational identity.

Recently, increasing environmental pressures from society and the market, along with modern regulations and laws, have heightened companies' awareness of the need to address environmental issues. As a result, companies have recognized the importance of engaging in green innovation, which refers to both software and hardware innovations related to green processes or products. This includes innovations in technologies for green product design, energy conservation, pollution prevention, and waste recycling. It has been established that corporate environmental management plays a crucial role in enhancing environmental performance and meeting the demands of environmental protection (Mi et al., 2020). Companies that support green innovation can optimize resource utilization and improve their organizational image and market share (Yong et al., 2019). In other words, companies can gain a competitive advantage over others in the green market by thriving in an increasingly innovative environment (Zhou, 2019). Promoting organizational green innovation and exploring ways to stimulate green innovative behavior have become increasingly important topics in the field of green innovation research (Li et al., 2020).

Given the environmental crises in Iran, such as water scarcity and pollution, there is a growing need for green measures, including green production and management. Using the theory of ability, motivation, and opportunity,

green transformational leadership can play a crucial role in motivating hospital employees through green recruitment and training. This approach can foster continuous innovation and enhance the green performance of organizations. Therefore, transformational leadership, by encouraging green innovative behaviors, directly impacts the hospital's green performance, resulting in reduced environmental impacts and improved hospital outcomes through waste reduction. In government organizations, particularly hospital services like Chamran Hospital, the absence of green innovative behaviors in service delivery contributes to environmental damage, ultimately leading to the destruction of the environment. Identifying green transformational leadership and cultivating appropriate green innovative behaviors can effectively harness employees' abilities, talents, and creative thinking, creating an ideal platform for turning ideas into technological solutions. This approach will undoubtedly bring hospitals closer to their goals and mitigate their challenges.

Currently, developed countries utilize suitable platforms to encourage green innovative behaviors, which accelerates the transformation of promising ideas into products and facilitates rapid problem-solving. Furthermore, both green transformational leadership and green innovative behaviors are recognized as influential factors on the environment. However, limited information exists on how contextual factors moderate these behaviors in the workplace. Additionally, the impact of this leadership on employees' green innovative work behaviors warrants further investigation. As a developing country, Iran requires more research in this area to enhance the functioning of both private and public organizations, including medical centers like hospitals. Accordingly, this research aims to assess the impact of green transformational leadership on green innovative behaviors, with the mediating role of organizational identity.

The following will describe the variables studied in this research:

Green Transformational Leadership: Green transformational leadership empowers organizations to enhance their environmental performance by offering green services and products to the market. This is achieved through

the acquisition of new knowledge by employees and the integration of this knowledge with activities related to innovation in green products and processes (Singh et al., 2020). Transformational leaders play a crucial role in shaping or changing the mindset of their followers; therefore, transformational leadership has a positive impact on mindfulness (Chen & Chang, 2013).

Green Innovative Behavior: Innovative behavior can manifest both individually and collectively. As such, innovation is a critical factor in organizations, serving as a key element in creating a suitable platform for sustainable competitive advantage in today's dynamic and ever-changing work environment and market (Choi et al., 2016).

Organizational Identity: Organizational identity is a collective and social construct that has been adapted from social identity theories to work environments, where it has been extensively discussed and researched (He & Brown, 2013). It represents a form of work identity, reflecting the degree of alignment between individual and organizational identities (Wang et al., 2017).

Organizational Embodiment: Organizational embodiment is a crucial concept in the educational, research, and executive activities within the field of public relations. Issues related to organizational image are important for researchers as meta-theoretical constructs, and for experts and practitioners as technical constructs (Lee, 2004). Organizational embodiment is considered a learned behavior (Rice et al., 2022). Specifically, it is argued that organizational embodiment is transmitted from top-level managers to mid-level supervisors through a modeling effect.

The following will examine the research conducted in this area:

(Sabokro et al., 2023) in their study titled "The Role of Green Transformational Leadership and Green Human Resource Management on Green Innovation and Environmental Performance" found that both green transformational leadership and green human resource management practices have a significant positive impact on green innovation and environmental performance. Among these, green human resource management practices had the most substantial influence on green

innovation. Additionally, green innovation acted as a mediator in the relationship between green transformational leadership and environmental performance. The study suggests that managers can promote sustainable development by strengthening human resources through green human resource management practices.

(Shahhosseini et al., 2023) conducted a study titled "Evaluating the Effectiveness of Green Transformational Leadership under the Sustainable Competency System of Human Resources of Golestan Province Oil Company" The findings indicate that, in the presence of collaborative human resource competencies, the most significant dimension of green transformational leadership is the effectiveness of opportunity.

(Turki et al., 2022), in their study titled "The Impact of Green Transformational Leadership on Green Behavior with the Mediating Role of Green Organizational Culture and Environmental Concerns," found that green transformational leadership positively influences green behavior through the mediating role of green organizational culture. Additionally, green transformational leadership also has a positive impact on green behavior through the mediating role of environmental concerns.

(Namazi & Khorramdel, 2022), in their study titled "The Impact of Green Innovation and Environmental Management Accounting on the Financial, Environmental, and Economic Performance of the Company," concluded that green product innovation has a significant direct impact on companies' financial, environmental, and economic performance through environmental management accounting. This form of innovation influences environmental performance in the oil and gas, petrochemical, metal, and food industries, and economic performance particularly in the metal industry. Additionally, green process innovation exerts both direct and indirect effects on financial and economic performance via environmental management accounting; however, its impact on environmental performance occurs solely through this mediating variable. Green process innovation influences financial performance in the oil and

gas, petrochemical, metal, and chemical industries, and affects economic performance only in the oil and gas and petrochemical sectors.

(Zhu et al., 2022), in their study titled "The Impact of Environment-Specific Transformational Leadership on Employees' Green Innovative Behavior – A Modified Mediation Model," found that environment-specific transformational leadership has a positive effect on employees' green innovative behavior. Both green organizational identity and green performance serve as mediators in this relationship. Moreover, the sequential path from green organizational identity to green performance also mediates the relationship between environment-specific transformational leadership and green innovative behavior. Additionally, supervisor organizational embodiment positively moderates the indirect effect of environment-specific transformational leadership on green innovative behavior through green performance. It also moderates the sequential mediation path of green organizational identity and green performance.

(Li et al., 2020), in their study titled "Unlocking Employees' Green Creativity: The Effects of Green Transformational Leadership, Green Intrinsic and Extrinsic Motivation," concluded that green transformational leadership significantly influences both green intrinsic motivation and green creativity. Moreover, green intrinsic motivation partially mediates the relationship between green transformational leadership and green creativity. In contrast, green extrinsic motivation, acting as a moderator, slightly diminishes the effect of green intrinsic motivation on green creative behavior. Therefore, organizational leadership should focus on enhancing employees' green motivation to foster innovation in environmentally friendly and sustainable products and services.

Based on the above, the main and sub-hypotheses derived from the conceptual model of the present study are as follows:

Main Hypothesis: Green transformational leadership has a significant impact on green innovative behaviors with the mediating role of organizational identity.

Sub-Hypotheses:

- Green transformational leadership has a significant impact on organizational identity with the moderating role of organizational embodiment.
- Green transformational leadership has a significant impact on organizational identity.
- Green transformational leadership has a significant impact on green innovative behaviors.

Organizational identity has a significant impact on green innovative behaviors.

Research Methodology

The present research is applied in purpose. Given that it employs both library-based research and field methods, such as the use of closed-ended questionnaires, it is classified as

descriptive-survey research in terms of its nature and methodology. The questionnaire was designed using a five-point Likert scale.

Considering the importance of environmental issues and the critical role hospitals play in shaping environmental protection strategies, Shahid Chamran Hospital in Isfahan was selected as the study site. The statistical population included managers and staff across various departments of Shahid Chamran Hospital, comprising a total of 170 individuals. Based on the population variance and the desired confidence level, the sample size was calculated using Cochran's formula, resulting in a sample of 118 participants. Due to the presence of multiple departments, stratified random sampling was employed.

A standardized questionnaire containing 31 items was used for data collection. The questionnaire items are presented in Table 1.

Table 1. Description of Research Variables

Variable	Questions	Source
Transformational Leadership	1-12	Zhu et al. (2022)
Green Innovative Behavior	13-18	
Green Organizational Identity	19-26	
Organizational Embodiment	27-31	

The validity of the questionnaire was assessed through construct validity using SmartPLS software, and its reliability was evaluated using Cronbach's alpha coefficient. A Cronbach's alpha value of 0.76 confirmed the

overall reliability of the instrument (Table 2). Furthermore, structural equation modeling (SEM) was employed to analyze the data and test the research hypotheses.

Table 2. Cronbach's Alpha Coefficients of Research Variables

Variable	Questions	Cronbach's Alpha
Transformational Leadership	1-12	0.941
Green Innovative Behavior	13-18	0.9
Green Organizational Identity	19-26	0.851
Organizational Embodiment	27-31	0.9

Research Findings

To examine the demographic characteristics of the respondents, the study population was analyzed based on gender. Of the respondents, 67.2% were male, and 32.8% were female. Regarding educational background, 31% held a master's degree, 46.6% had a bachelor's degree, 10.3% had an associate degree, 4.3% had a doctoral degree, and 7.8% had completed high school. The work experience of the respondents revealed that the largest group

(24.1%) had between 16 and 20 years of experience, while the smallest group (3.4%) had 30 or more years of experience. The majority of respondents (41.4%) were in the 31 to 40 years age range, followed by those in the 41 to 50 years range (32.8%). In terms of marital status, most participants were married, and regarding their organizational positions, the majority held roles as experts/specialists.

Descriptive Analysis of Measures

To analyze the descriptive statistics of the measures, the mean, standard deviation, variance, skewness, and kurtosis were examined.

Table 3. Descriptive Data

Measure	Mean	Standard Deviation	Variance	Skewness	Kurtosis
Transformational Leadership	2.169	0.735	0.541	0.703	0.39
Green Innovative Behavior	2.264	0.788	0.622	0.932	1.369
Green Organizational Identity	1.885	0.509	0.26	0.93	-0.267
Organizational Embodiment	2.062	0.744	0.555	0.454	-0.212

According to Table 3, the highest mean was observed for green innovative behavior, which also had the highest variance and standard deviation. Conversely, the lowest mean, variance, and standard deviation were found for green organizational identity.

Inferential Statistics

In the inferential analysis, the research hypotheses were evaluated and tested using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. The analysis

was conducted in two main stages: model fit assessment and hypothesis testing. The model fit assessment was divided into three components: measurement model fit, structural model fit, and overall model fit.

To examine the normality of the data, the Kolmogorov-Smirnov test was applied. A significance level below 0.05 indicates non-normality, while a significance level above 0.05 suggests that the variables are normally distributed. Table 4 presents the normality results for the variables.

Table 4. Normality Test of Research Variables

Variables	Kolmogorov-Smirnov	Significance Level	Result
Transformational Leadership	0.105	0.174	Normal
Green Innovative Behavior	0.155	0.001	Non-normal
Green Organizational Identity	0.1	0.2	Normal
Organizational Embodiment	0.137	0.009	Non-normal

Hypothesis Testing and Model Fit

Fit of the Conceptual Model: Before addressing the research hypotheses, the measurability of the research variables through the questionnaire

items was assessed using factor analysis. Table 5 presents the research model with factor loading coefficients, indicating that all items had appropriate factor loadings.

Table 5. Factor Loading of Questions

Questions	Factor Loading	Questions	Factor Loading	Questions	Factor Loading
Q1	0.644	Q11	0.813	Q21	0.592
Q2	0.822	Q12	0.748	Q22	0.508
Q3	0.818	Q13	0.849	Q23	0.721
Q4	0.752	Q14	0.86	Q24	0.82
Q5	0.754	Q15	0.838	Q25	0.758
Q6	0.831	Q16	0.818	Q26	0.794
Q7	0.818	Q17	0.667	Q27	0.828
Q8	0.825	Q18	0.86	Q28	0.807
Q9	0.814	Q19	0.682	Q29	0.839
Q10	0.741	Q20	0.756	Q30	0.873
				Q31	0.885

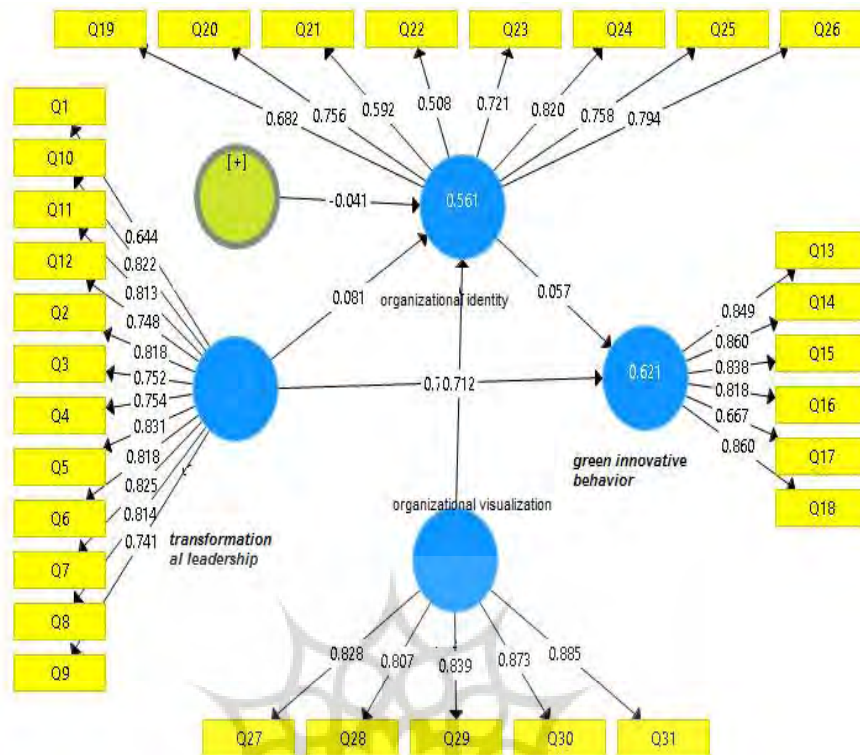


Figure 1. Research Model in Coefficient Mode

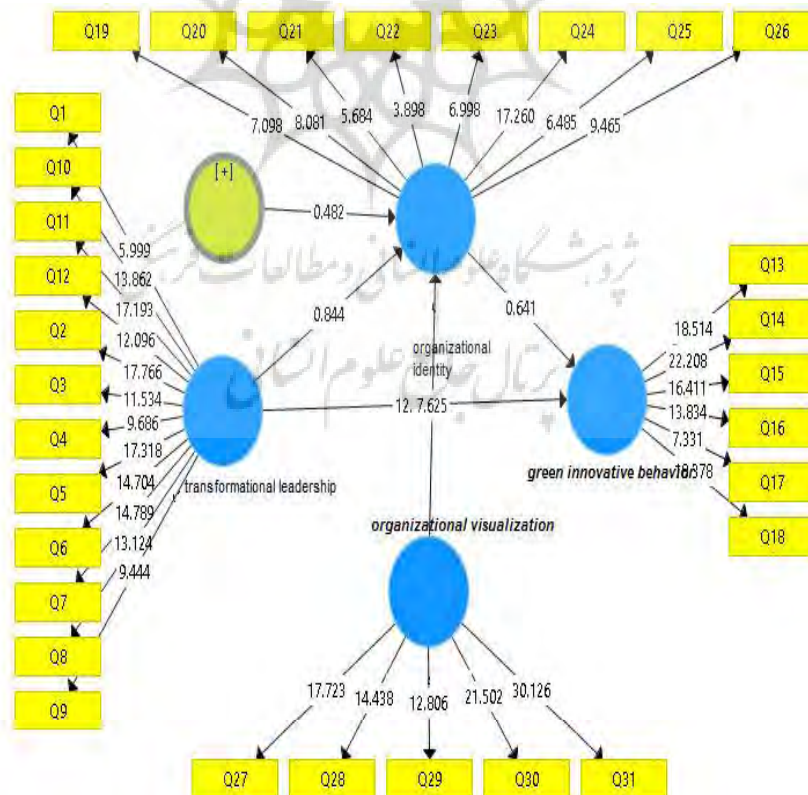


Figure 2. Fit Evaluation Criteria (Measurement Model Section)

Figure 1 presents the research model with coefficient values, while Figure 2 displays the research model with t-statistic values. The numbers on the paths represent the t-statistic values for the relationships. If the t-statistic exceeds the critical value of 1.96 at a 95% confidence level, this indicates a significant relationship between the two variables.

Analysis of Composite Reliability

In the PLS method, rather than assessing the overall reliability of the questionnaire and the entire model, the reliability of each latent variable in the research model is calculated individually. To measure the reliability of these variables, both the composite reliability index and Cronbach's alpha coefficient were used. The reliability of the research variables is presented in Table 6.

Table 6. Reliability of Research Variables

Variable	Cronbach's Alpha	Composite Reliability	Result
Organizational Embodiment	0.901	0.927	Acceptable Reliability
Green Innovative Behavior	0.889	0.923	Acceptable Reliability
Transformational Leadership	0.942	0.95	Acceptable Reliability
Organizational Identity	0.856	0.889	Acceptable Reliability

As observed, the reliability of the extracted variables is greater than 0.7, indicating acceptable reliability.

Validity Analysis

In this research, the average variance extracted (AVE) was used to measure the convergent validity of the variables. Simply put, AVE

shows the correlation of a construct with its indicators; the higher this correlation, the better the fit. (Fornell & Larcker, 1981) introduced 0.5 as the critical value. The information in Table 7 shows that the AVE value for all variables is above 0.5, indicating good convergent validity for these variables.

Table 7. Average Variance Extracted (AVE) of First-Order Latent Variables

Variable	AVE	Result
Organizational Embodiment	0.717	Suitable Convergence
Green Innovative Behavior	0.669	Suitable Convergence
Transformational Leadership	0.614	Suitable Convergence
Organizational Identity	0.505	Suitable Convergence

Discriminant validity assesses the degree to which a construct is truly distinct from other constructs within the model. Acceptable discriminant validity indicates that a construct is more strongly correlated with its own indicators than with those of other constructs. According to Fornell and Larcker (1981), discriminant validity is considered acceptable when the square root of a construct's AVE exceeds its correlations with other constructs.

In the PLS approach, this is evaluated using a matrix that displays the correlation coefficients among constructs and the square roots of AVE values on the diagonal. Discriminant validity is confirmed when the diagonal values are greater than the corresponding off-diagonal values. As shown in Table 8, the constructs in this study do not demonstrate acceptable discriminant validity.

Table 8. Fornell-Larcker Method for Discriminant Validity Assessment

	Organizational Embodiment	Green Innovative Behavior	Transformational Leadership	Organizational Identity
Organizational Embodiment	0.847			
Green Innovative Behavior	0.429	0.818		
Transformational Leadership	0.484	0.786	0.784	

	Organizational Embodiment	Green Innovative Behavior	Transformational Leadership	Organizational Identity
Organizational Identity	0.743	0.385	0.43	0.811

Evaluation Criteria for Fit (Structural Section)

The R^2 value is calculated only for the endogenous (dependent) constructs in the model, and it is zero for the exogenous constructs. Based on established benchmarks, R^2 values of 0.19, 0.33, and 0.67 are interpreted

as indicating weak, moderate, and strong explanatory power, respectively. As shown in Table 9, the coefficient of determination for green innovative behavior is strong, while that for organizational identity is moderate. Overall, these results suggest that the model demonstrates a good level of fit.

Table 9. R^2 Coefficients of Endogenous Variables

Variable	R^2
Green Innovative Behavior	0.621
Organizational Identity	0.561

Since the Q^2 values for the endogenous variables are positive, this indicates that the model has strong predictive relevance for the

research constructs, thereby confirming the structural model's fit once again.

Table 10. Q^2 Criterion for Endogenous Variables

Variables	Q^2
Green Innovative Behavior	0.391
Organizational Identity	0.249

To assess the overall fit of the model, the Goodness of Fit (GOF) criterion was applied, calculated using the following formula:

$$GOF = \sqrt{(\text{Communality} \times R^2)}$$

Communality refers to the average of the communality values for each construct, while

R^2 represents the average R^2 values of the model's endogenous constructs. According to Wetzels et al. (2009), GOF values of 0.1, 0.25, and 0.36 are considered weak, moderate, and strong, respectively. Based on the values presented in Table 11, the GOF is classified as strong.

Table 11. GOF Criterion

GOF	Result
0.644	Strong

Main Path Coefficients

Table 12. Main Path Coefficients

Path	Coefficient	T-Statistic	Significance Level
Green Innovative Behavior <- Organizational Identity <- Transformational Leadership	0.005	0.349	0.727
Green Innovative Behavior <- Organizational Identity <- Organizational Embodiment - Organizational Identity	-0.002	0.223	0.824
Green Innovative Behavior <- Transformational Leadership	0.762	12.138	0
Organizational Identity <- Transformational Leadership	0.081	0.844	0.399
Green Innovative Behavior <- Organizational Identity	0.057	0.641	0.522

Examination of Research Hypotheses

Main Hypothesis: Green transformational

leadership has a significant effect on green innovative behaviors with the mediating role of organizational identity.

Mediation was measured using the Sobel test. If the test statistic from the Sobel test is greater than the critical value of 1.96, the mediating effect is significant. However, the P-value obtained (0.727) and the t-statistic (0.349), which is below the 1.96 threshold, indicate that this mediating effect is not statistically significant. Therefore, the main hypothesis is not supported.

The test statistic in this method is calculated using the following formula:

$$t = \frac{a * b}{\sqrt{(b^2 * s_a^2) + (a^2 * s_b^2)}}$$

Where:

- a: Path coefficient between the independent and mediating variable
- b: Path coefficient between the mediating and dependent variable
- Sa: Standard error of the path between the independent and mediating variable
- Sb: Standard error of the path between the mediating and dependent variable

First Sub-Hypothesis: Green transformational leadership has a significant effect on organizational identity with the moderating role of organizational embodiment.

According to the P-values obtained for the variables green transformational leadership and green innovative behaviors, with the moderating role of organizational embodiment, which is 0.789, and also the t-statistic for this coefficient being 0.267 and smaller than 1.96, indicating that this coefficient is not significant at the 5% error level, it can be said that green transformational leadership does not have a significant effect on green innovative behaviors with the moderating role of organizational embodiment. Therefore, the hypothesis is not supported.

Second Sub-Hypothesis: Green transformational leadership has a significant effect on organizational identity.

According to the P-values obtained for the variables green transformational leadership and organizational identity, which is 0.399, and also

the t-statistic for this coefficient being 0.641 and smaller than 1.96, indicating that this coefficient is not significant at the 5% error level, it can be said that green transformational leadership does not have a significant effect on organizational identity. Therefore, the hypothesis is not supported.

Third Sub-Hypothesis: Green transformational leadership has a significant effect on green innovative behaviors.

According to the P-values obtained for the variables green transformational leadership and green innovative behaviors, which is 0.000, and also the t-statistic for this coefficient being 12.138 and greater than 1.96, indicating that this coefficient is significant at the 5% error level, it can be said that green transformational leadership has a significant effect on green innovative behaviors. Therefore, the hypothesis is supported.

Fourth Sub-Hypothesis: Organizational identity has a significant effect on green innovative behaviors. According to the P-values obtained for the variables green transformational leadership and green innovative behaviors, which is 0.522, and also the t-statistic for this coefficient being 0.641 and smaller than 1.96, indicating that this coefficient is not significant at the 5% error level, it can be said that organizational identity does not have a significant effect on green innovative behaviors. Therefore, the hypothesis is not supported.

Conclusion

Preventing environmental degradation and enhancing ecological quality have emerged as critical challenges for modern organizations. Safeguarding the environment has become a strategic priority, prompting companies to establish innovative teams dedicated to environmental protection. As a result, governments actively support and incentivize organizations that offer green products and services, as these environmentally conscious practices not only enhance organizational reputation but also contribute to cost efficiency. Consequently, green services and eco-friendly initiatives have become essential components of inter-organizational competitiveness. Also, Green transformational leadership and green

innovative behavior are widely acknowledged as key drivers of environmental impact. Accordingly, this study sought to examine the influence of environmentally oriented transformational leadership on green innovative behavior, considering the mediating roles of green organizational identity and organizational embodiment within Chamran Hospital.

The results indicated that green transformational leadership does not significantly influence green innovative behavior through the mediating role of organizational identity. This finding contradicts prior studies that have highlighted the critical role of identity in shaping pro-environmental behaviors, suggesting possible context-specific barriers or measurement limitations in the current study. Nevertheless, green transformational leadership, by promoting a clear environmental vision, can still foster green innovation. Specifically, leaders may encourage employees to engage in green innovative behaviors by offering environmental inspirational motivation, modeling environmentally responsible behavior, providing individualized environmental consideration, and stimulating environmental intellectual engagement.

First, green transformational leaders inspire employees to overcome both psychological and external barriers by demonstrating enthusiasm and optimism, thereby igniting their passion for green innovation. Second, by actively participating in environmental protection initiatives, leaders serve as role models, encouraging employees to emulate their commitment to sustainability. Third, such leaders foster independent thinking and challenge outdated environmental management practices, thereby stimulating employees' green innovation and empowering them to question conventional approaches. Fourth, they recognize and support employees' capabilities in environmental initiatives, helping them develop relevant skills and guiding them toward innovative problem-solving in ecological contexts. Ultimately, green transformational leadership signals to employees that their green innovative behaviors are valued and rewarded both through leadership recognition and through tangible and intangible incentives (Zhu et al., 2022).

Howang et al. (2023) emphasized that

organizational identity, as a mediating variable, enhances employees' engagement in green behaviors particularly when employees possess a strong green orientation. The rejection of the related hypothesis in this study may be attributed to the limited mediating influence of organizational identity. Furthermore, the findings revealed that green transformational leadership significantly influences organizational identity, moderated by organizational embodiment. Organizational embodiment refers to employees' perceptions of the extent to which their leader represents and upholds the organization's values and norms. It reflects the degree to which employees identify the leader as a symbolic extension of the organization itself. A leader perceived as embodying the organization's values and characteristics exerts a stronger influence on employees' attitudes toward the organization. However, not all employees view their leader as a true representative of the organization, and this perception can vary significantly among individuals. Employees with a high perception of organizational embodiment tend to align their supervisor's values, motivations, and goals closely with those of the organization. As a result, they interpret praise or criticism from the supervisor as coming directly from the organization itself. Likewise, they perceive the supervisor's statements regarding organizational goals and priorities as accurate and authoritative. In contrast, employees who perceive low organizational embodiment tend to view their supervisor as acting more independently, with the relationship between the employee and the supervisor serving less as a bridge to the organization. Consequently, these employees attribute the supervisor's praise or criticism to the supervisor personally, rather than to the organization, and perceive the supervisor's statements about organizational goals and performance expectations as unclear. Organizational embodiment, therefore, plays a crucial role in linking the relationships between leaders, employees, and the organization. It helps clarify how the dynamic between leaders and employees influences the broader relationship between employees and the organization. Eisenberger et al. (2010) noted that a leader's organizational embodiment enhances the transfer of employees' feelings

and attitudes toward the leader to the organization. Furthermore, they have emphasized that high levels of organizational embodiment are essential for transforming a high-quality relationship with the leader into stronger organizational commitment (Costa et al., 2022). It was suggested that organizational embodiment positively moderates the relationship between ethical leadership and employees' organizational identity. However, the rejection of this hypothesis in the current study highlights a need to re-examine the conceptual clarity and operationalization of the embodiment construct.

A review of the results revealed that green transformational leadership does not have a significant effect on organizational identity. From a cognitive standpoint, organizational identity refers to an individual's sense of belonging and membership within the organization, reflecting the alignment of individual and organizational values. Organizational members, particularly leaders, have the ability to alter their interpretations or introduce new conceptualizations that reshape organizational identity, especially in response to environmental changes. Social exchange theory posits that employees maintain exchange relationships with others based on the expectation of mutual benefits. The principle of reciprocity central to this theory fosters the development of such exchanges. According to social exchange theory, green transformational leadership can strengthen employees' green organizational identity, which in turn drives innovation within the organization. Specifically, first, leaders can model pro-environmental behaviors, setting an example of environmental responsibility that influences employees' positive attitudes toward the organization's environmental initiatives. Second, leaders inspire employees by sharing a compelling vision of environmental protection, fostering enthusiasm and optimism that shifts employees' focus toward the long-term growth of both the organization and nature. Third, leaders can link subordinates' personal values with organizational values, instilling a sense of responsibility that stimulates employees' organizational identity and encourages them to think more critically about the environment.

In general, green transformational leadership has a gradual impact on shaping employees' attitudes toward environmental challenges, boosting their enthusiasm for environmental protection, and ultimately enhancing their organizational identity. As a purposeful and strategic approach, green transformational leadership requires fostering a strong connection between employees and green development, as well as encouraging their intention for green innovation, so they can demonstrate these behaviors in the workplace. First, organizational identity serves as a motivating factor, driving employees to actively participate in green innovative behaviors. This motivation stems from deep internal drive and plays a crucial role in sustaining a long-term relationship between employees and the organization. Second, when employees align with the organization's environmental management practices, they perceive their personal interests to be in harmony with the organization's goals. As a result, they are more likely to work toward achieving environmental benefits for the organization, actively contributing innovative ideas and suggestions for environmental protection. Moreover, some researchers emphasize that employees' organizational identity fosters their work innovation and proactive, responsible behaviors (Chang et al., 2011).

Zhu et al (2022) noted that employees with a strong organizational identity are more likely to engage in green innovative behaviors. Similarly, Kheirandish et al (2019) suggested that transformational leadership, by inspiring and stimulating emotions, fosters a sense of pride in employees towards both themselves and the organization, thereby promoting a sense of collective identity.

However, the findings of this study do not align with these previous conclusions. This discrepancy may be explained by the possibility that, from the perspective of Chamran Hospital employees, green transformational leadership has not had a significant impact on organizational identity or the expectations they hold of their managers. Furthermore, it can be recognized that the perception of green transformational leadership in relation to

organizational identity may be subjective rather than grounded in reality.

The findings indicate that green transformational leadership significantly influences green innovative behaviors, thereby supporting the hypothesis. Transformational leaders aim to enhance green behaviors in their followers by shaping their attitudes toward the environment. When organizations adopt environmentally responsible practices and their leaders implement effective strategies for resource optimization and environmental threat reduction, they can expect their employees to engage in more green behaviors. Ultimately, green transformational leadership contributes to improved organizational performance by cultivating a culture of sustainability.

In essence, by focusing on the individual needs of employees, green transformational leadership may encourage the development of green human resource management practices, thus keeping stakeholders motivated and empowered. The presence of environmentally conscious leaders establishes a framework that promotes green behaviors and fosters a positive environmental mindset among followers. Farhadi Nejad et al. (2019) concluded that green transformational leadership has a significant positive impact on environmental attitudes and green behavior. The findings of this study align with prior research.

Based on the results, it can be concluded that organizational identity does not significantly affect green innovative behaviors, thus the hypothesis is not supported. However, organizational identity plays a crucial role in shaping employees' attitudes and effectiveness. Employees with a strong sense of organizational identity tend to engage in more collaborative behaviors, which can enhance the organization's competitiveness. Specifically, organizational identity directly influences public behavior and overall attitudes toward the organization. The presence of organizational identity among members encourages them to go beyond their routine tasks, fostering a willingness to engage in activities driven by a deeper level of motivation. When employees develop a strong sense of identity with the organization, their sense of belonging and duty increases, cultivating shared feelings of respect and interdependence within the organization, particularly among employees.

Employees with a strong organizational identity are more compassionate, patient, and responsible, demonstrating tolerance for changes and challenges in the workplace. They are committed to their duties, work collaboratively towards organizational goals, and build trust within the team. These employees exhibit a positive attitude towards their work, showing initiative, self-control, and adaptability. Moreover, cultivating a sense of organizational identity makes employees feel personally connected to the organization's success, viewing it as their own achievement. The significance of belonging and solidarity, rooted in organizational identity, lies in the stronger, more supportive bonds it creates, characterized by mutual support, freedom of expression, and collective care. Employees who feel a strong connection to their work environment are more likely to engage in actions that enhance the organization's image and support their colleagues. When employees' values align with those of the organization, they experience higher job satisfaction, greater organizational commitment, and a lower likelihood of leaving. Additionally, they develop more positive attitudes towards their colleagues and exhibit proactive social behaviors. This sense of alignment fosters a deeper sense of job satisfaction, as employees view the organization as a supportive entity, ultimately seeing themselves as an integral part of it.

The cognitive dimension of social capital refers to resources embedded in shared systems of meaning, interpretation, and understanding within groups—chief among them being collaboration and common values. The development of these implicit, shared meanings fosters learning transfer and collective understanding, which in turn reinforces elements of organizational identity. By cultivating a shared understanding, individuals within the organization experience a stronger sense of mutual belonging, contributing to a more positive and cohesive organizational environment.

According to Chang (2011), green organizational identity has a positive impact on green innovation performance. Furthermore, a company's environmental commitment not only directly enhances green innovation outcomes but also exerts an indirect effect

through its influence on green adaptability. Thus, organizations with well-developed green identities may be better equipped to adapt and innovate in the face of environmental challenges.

However, in the context of Chamran Hospital, the findings suggest that even if organizational identity exists, it may not significantly influence the green innovative behaviors expected by employees from their managers. This discrepancy might be attributed to employees' subjective and potentially inconsistent perceptions of the connection between organizational identity and green innovation, which may not fully reflect actual organizational practices or leadership intentions. To address this gap and foster green innovative behaviors, leaders and managers at Chamran Hospital should take proactive steps. One approach is to incorporate environmental criteria into the recruitment process by designing assessments that identify candidates inclined toward green behavior. In addition, developing a framework that models green competencies and behaviors can serve as a reference for employees, aligning their practices with sustainability goals. Organizing workshops on environmental issues can also reshape attitudes and promote behavioral change among staff. Furthermore, incorporating training modules based on emerging leadership theories can help translate modern leadership styles into practice encouraging hospital members to strengthen their identification with the organization. Hospital managers should also cultivate and

exemplify green leadership traits themselves, while investing in the attraction, development, and retention of employees who are aligned with the hospital's commitment to environmentally responsible operations and services. These efforts can collectively strengthen green organizational identity and enhance innovation rooted in sustainability. Moreover, leaders and managers at Chamran Hospital should actively explore strategies to cultivate a strong green organizational identity and leverage this identity to gain environmental legitimacy in the eyes of key stakeholders. Strengthening the perception of the hospital's green identity and encouraging green creativity not only reinforces internal cohesion but also enhances the hospital's long-term capacity for sustainable development. To build on these insights, future research could explore the influence of other environmentally supportive leadership styles such as sustainable leadership on employees' responsible and pro environmental behaviors.

As with many studies, this research has certain limitations. One significant limitation lies in its cross-sectional design, which restricts the ability to draw strong causal inferences. Although the findings are generally aligned with the proposed hypotheses, a longitudinal study could offer deeper insight into how these variables interact over time. Therefore, future research should consider longitudinal approaches to better capture the directionality and development of the relationships identified in this study.

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