


Article

Does Green Transformational Leadership Develop Green Absorptive Capacity? The Role of Internal and External Environmental Orientation

Burcu Ozgul 

Department Head International Trade and Business, Faculty of Economics, Administrative and Social Sciences, Istanbul Topkapi University, 34087 Istanbul, Turkey; burcuozgul@topkapi.edu.tr

Abstract: Numerous researchers have investigated the concept of green absorptive capacity, but relatively few studies have been performed on its antecedents. The objective of the present research was to develop and empirically test a theoretical model, which analyzes how green transformational leadership and the (internal and external) environmental orientation of business owner-managers in small- and medium-sized enterprises (SMEs) affect green absorptive capacity. The data were collected from 373 SMEs with an ISO 14001 certificate in Turkey's manufacturing industry by the survey method. The data were examined in the SmartPLS 3 analysis program to analyze the hypotheses. According to the research findings, the green transformational leadership of business owner-managers in SMEs and (internal and external) environmental orientation significantly influence the green absorptive capacity. The findings also revealed that (internal and external) environmental orientation partially mediates the correlation between the green transformational leadership and green absorptive capacity. Hence, this research presented new information on how green transformational leadership and the (internal and external) environmental orientation of business owner-managers improve green absorptive capacity in SMEs.

Keywords: green transformational leadership; green absorptive capacity; internal environmental orientation; external environmental orientation



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1. Introduction

Increasing global environmental problems force SMEs, the major producers of environmental pollution, to take responsibility for dealing with ecological concerns [1–3]. Pressures from different stakeholders such as consumers, governments, competitors, and communities also require SMEs to be environmentally proactive and innovative [4–6].

For SMEs to produce solutions to environmental problems (pollution prevention, the efficient use of scarce resources, etc.), they must be able to identify internal and external green knowledge about the natural environment and obtain, assimilate, integrate, and exploit green knowledge [6–8]. Therefore, the concept of green absorptive capacity emerges at this point. Green absorptive capacity allows SMEs to form new green knowledge, skills, routines, and know-how, causing them to be more flexible to environmental conditions and changes [9]. Accordingly, SMEs can combine their available green knowledge with newly acquired green technological knowledge, create new green technological knowledge by integrating it with previous green knowledge [8], and apply this green technological knowledge to green innovations [10,11].

Although absorptive capacity has been extensively discussed in the business management literature, little research suggests an integrated green absorptive capacity model in the green management literature [8]. Current studies have proven the positive influence of green absorptive capacity on green innovation performance [11–17]. Since green innovation is crucial to the sustainability and growth of enterprises' assets [18,19], improving the green absorptive capacity in SMEs is important [20]. Nevertheless, little is known in the literature

about the antecedents of green absorptive capacity [15]. Few scientists have studied green shared vision, green organizational culture [7], and green core competencies [15] in research on the antecedents of green absorptive capacity.

In the literature, attention is drawn to the fact that senior management leaders affect every element of the learning system and its absorptive capacity [21–23]. Previous studies have stated that transformational leadership represents the leadership style that supports learning processes the most [23–27].

Social learning theory argues that people can learn novel information and behaviors by observing others. The said type of learning, also called observational learning, is closely related to the green transformational leadership style [28]. Such leaders can create a green awareness context and activate green organizational processes by encouraging their followers to develop new green ideas and learn new green technologies [29]. By displaying the green transformational leadership style, senior leaders in SMEs (i.e., business owner–managers) can improve the enterprise’s green capabilities [18], increase their interest in the natural environment by impacting the attitudes, values, and behaviors of employees to solve environmental problems and, thus [30,31], improve the green absorptive capacity of the enterprise. The idea that the green transformational leadership style improves green learning [31] and green dynamic capabilities [18] has been empirically supported. However, in the review of the green management literature, no studies investigating the influence of green transformational leadership on developing green absorptive capacity have been encountered [17]. To fill this gap, the current study tested this relationship, arguing that the green transformational leadership of business owner–managers in SMEs could increase the green absorbing capacity of the business.

Furthermore, the current study proposed environmental orientation as an organizational strategic resource that could significantly support the green absorptive capacity [32–34]. The environmental orientation was examined in two dimensions: internal environmental orientation, which involves the standards and values related to an enterprise’s level of commitment to the environment, and external environmental orientation, which involves recognizing and responding to stakeholders’ environmental demands of an enterprise [35,36].

According to the natural resource-based view (NRBV), internal environmental orientation, described as a strategic capability, can encourage the resources and capabilities needed to implement green practices in SMEs and ultimately improve their green absorptive capacity [34]. According to institutional theory, it is known that SMEs, which want to maintain their stability and legitimacy, turn to pro-environmental practices (environmental supply chain practices) to continue their activities in line with the demands of their external stakeholders. The enterprises with a high external environmental orientation can develop their green absorption capacity since they participate more in the activities of their business partners and establish more relationships with their stakeholders [37,38]. There is no study in the literature examining environmental orientation as an antecedent of green absorptive capacity. To fill this gap, the effect of environmental orientation on adopting green absorptive capabilities will be tested.

On the other hand, it is well-known that business leaders initiate environmental orientation in line with their ideologies toward the natural environment. Owing to their attitudes and behaviors, these leaders can spread these ideologies throughout the enterprise and turn them into the organization’s culture [39]. According to upper echelons theory, senior leaders in SMEs can influence the strategic choices of the enterprise [40]. Therefore, when business owner–managers in SMEs display green transformational leadership, they can take a leading part in developing the environmental orientation. Although the study by Kim and Stepchenova [41] also supported the correlation between green transformational leadership and environmental orientation (internal and external environmental orientation), this relationship was not examined in the context of SMEs. Considering the significance of SMEs for the economy, this emerges as a significant gap in the literature. Additionally, researchers have not yet employed internal and external environmental orientation as a

basic mechanism in the correlation between green transformational leadership and green absorptive capacity. Hence, the present study suggested that environmental orientation (internal and external environmental) and the impacts of green transformational leadership serve as a basic mechanism advancing green absorptive capacity in the context of SMEs.

As a result, SMEs are undeniably important for many developing countries, such as Turkey, and contribute considerably to the economy through their synergetic relations with other sectors [42,43]. Hence, to compensate for the shortcomings of the existing literature, the present research focuses on SMEs with an ISO 14001 certificate in the manufacturing industry, addressing the antecedents of green absorptive capacity (green transformational leadership and environmental orientation). Therefore, the current research may contribute to the literature and practice by addressing the two important research questions below.

RQ1. Do green transformational leadership and environmental orientation (internal and external environmental orientation) in SMEs influence green absorptive capacity?

RQ2. Does environmental orientation (internal and external environmental orientation) in SMEs mediate the correlation between green transformational leadership and green absorptive capacity?

2. Theoretical Development and Hypothesis Presentation

2.1. Green Transformational Leadership and Green Absorptive Capacity

Considering the complex nature of the sustainability phenomenon, the green absorptive capacity denotes the ability of an enterprise to identify, understand, communicate, and integrate green knowledge with the objective of supporting sustainable innovation [9]. An enterprise can obtain a sustainable competitive advantage using its external and internal green knowledge, i.e., its green absorptive capacity [15]. The green absorptive capacity is essential in innovative green activities, emphasizing the usage of resources in a rational way to acquire environmentally friendly business opportunities [14]. Nevertheless, the question of how to improve the green absorptive capacity, especially in SMEs, is an important subject.

The absorptive capacity of an enterprise is connected to its previous relevant knowledge [19], R&D resources, interaction mechanisms, management processes, previous learning experience [44], the presence of a common subculture [45], and management leadership style [7,23]. The leadership style is regarded as a strategic factor that shapes the innovative potential of the enterprise by creating and developing an appropriate environment encouraging the production and application of knowledge [46]. There are pieces of evidence showing that the transformational leadership style improves the absorptive capacity [23,47]. The question, “Does green transformational leadership support the development of green absorptive capacity?” becomes important at this point. Chen and Chang [48] regarded the concept of green transformational leadership as a leadership style motivating its followers to achieve environmental goals and inspiring them to display performance beyond the expected environmental performance levels.

According to social learning theory [49], based on observational learning, followers can learn new knowledge and behaviors by following the green transformational leader [28]. Thus, the green transformational leaders who are capable of creating a vision of change in the organization and seeking novel opportunities can facilitate learning [25]. There is a close association between the said situation and the four properties of green transformational leadership. Specifically, the green idealized influence represents a leadership trait that acts as an exemplary and environmental role model, impacting the pro-environmental behavior of the employee through his/her charisma. Green inspirational motivation is when the leader encourages employees to transcend their short-term personal interests and strive to reach green goals. Green intellectual stimulation is the leaders’ capability to motivate their employees to challenge previous ideas and utilize novel methods for the solution of environmental problems and adopt productive and exploratory thinking processes [50]. Green individualized consideration denotes the leadership behavior displayed by leaders in valuing the contributions of their employees to green issues and assisting them with

improving green skills [51]. When individual motivation and capability determine valuing novel green external knowledge [52], green transformational leaders can integrate and assimilate the enterprise's green new knowledge into the existing knowledge bases by establishing screening mechanisms to recognize green external knowledge sources [25]. Scientific debates also demonstrate that green transformational leaders affect the green intrinsic motivations of their followers [53], their pro-environmental behavior in the workplace [54,55], their green social identities [56], green commitment [57], green self-efficacy [58,59], green awareness [60,61], green work commitment [62], and green creativity [59,63]. Furthermore, scientific research confirms that green transformational leaders facilitate green exploratory and exploitative learning [64] and improve green dynamic capabilities [18]. Nevertheless, despite the importance of employees and resources, no study researched the influence of green transformational leadership on developing the green absorptive capacity [17]. The lack of studies on the mentioned relationship is surprising.

With their strategy, vision, courage, and passion, the green transformational leaders can take an essential part in developing the green absorptive capacity in SMEs. The research by Chen et al. [7] also showed that a green shared vision positively impacted the green absorptive capacity. Business owner-managers in SMEs have both more control over resources and the authority to set difficult goals [65]. In other words, they can communicate a green shared vision, clear policy goals, and tasks to all enterprise members [7]. Hence, it is possible that leaders in SMEs (business owner-managers) will become role models for followers to learn from because their followers observe them for their status, authority, and control over resources [66]. Through green intellectual stimulation and green individualized consideration, these leaders can improve the ability of employees to think about environmental subjects, enrich the environmental knowledge of employees, and assist employees with developing environmental skills continuously [55]. Moreover, they can enable knowledge to be communicated and shared and identify the knowledge gap by establishing good communication networks and promoting a spirit of trust [23]. Additionally, by encouraging their followers to question assumptions, motivating them to be curious, and encouraging them to take "intelligent" risks and make creative observations, they can promote individual, group, and organizational learning [67] and, thus, develop the enterprise's green absorptive capacity. From the said perspective, the present research argued that the green transformational leaders (business owner-managers) in SMEs allow the improvement of the green absorptive capacity. Hence, green transformational leaders are expected to be an essential organizational factor in promoting the development of the green absorptive capacity in SMEs. Taking this into account, the hypothesis below was proposed in the present research:

Hypothesis 1 (H1). *The green transformational leadership of managers in SMEs is positively correlated with green absorptive capacity.*

2.2. Green Transformational Leadership and Environmental Orientation

The environmental orientation [68], described as the managers' acceptance of the significance of environmental problems enterprises face, can also be considered an enterprise's strategic orientation to operate sustainably [69]. Therefore, the environmental orientation that guides an enterprise's strategy development and business operations can be characterized as an integral part of the overall strategic stance of the enterprise [70]. The environmental orientation is regarded as the basic concept of green management research and a business principle guiding corporate environmental practices [34,71] and is examined in two dimensions, the internal and external environmental orientation [72]. Internal environmental orientation shows the value of protecting the natural environment, the moral standards of environmental responsibility, and the senior managers' commitment to environmental protection. External environmental orientation is associated with managers' awareness of the significance of the natural environment and their opinions on fulfilling the environmental needs of external stakeholders (customers, government,

competitors, and other external stakeholders) [34]. In response to stakeholder demands to protect the environment, enterprises adopt a pollution prevention approach and experience a change in business models and management thinking to promote green opportunities and innovations [72]. The question of how environmental orientation is developed, especially in SMEs, is important.

The sustainability activities of enterprises are mostly created and followed by senior managers. Hence, the vision of the enterprise's top management on sustainability determines the position of the enterprise in this regard. According to upper echelons theory, the decisions and choices of senior managers influence business performance [73]. In line with the theory, managers' visions (especially the areas that senior managers attach attention to) and environmental perceptions are restricted by their cognitive foundations and values and senior managers' perceptions of the corporate environment also impacts their decisions [74]. The basic foundation of upper echelons theory is the point where the experiences, values, and particular features of senior managers influence their decisions for the enterprise [75]. According to upper echelons theory, business owner-managers in SMEs can influence the strategic choices of the enterprise and play an instrumental role in the enterprise's environmental sustainability journey [76]. Srinivasan and Kurey [77] also emphasize leadership as the key to success in corporate cultural change. The leadership style represents the main determinant of employee well-being, relations with individuals, emotions, performance, and voluntary and involuntary behavior in the workplace. Cheung and Wong [78] asserted that leadership was an important contextual factor in the workplace and could significantly affect employees' attitudes and behaviors. Moreover, Taylor [79] highlighted that transformational leaders were the most effective environmental advocates. The green transformational leadership style of business owner-managers in SMEs can become the main part in developing environmental orientation. The ideologies of leaders are reflected in employee behavior, are manifested in the daily functioning of the enterprise, and become a part of the enterprise culture [80]. In other words, senior leaders have important duties in developing the internal environmental orientation of the enterprises [68], expressed as green culture [81]. The leaders are regarded as role models by employees and when leaders have an environmentalist approach, employees are motivated to adopt the approach to protect the environment [82] and, thus, they can develop internal environmental orientation throughout the enterprise [83].

Furthermore, green transformational leadership, as a promising leadership style, can strengthen the green image of the enterprise and thus develop the external environmental orientation of the enterprise by providing an inspiring green vision and motivating its followers to fulfill environmental goals or tasks in an active way [63]. Surprisingly, there is little research on the green transformational leadership and environmental orientation of enterprises. Hence, the present study clarified the important role of leadership (business owner-managers) in SMEs in developing the environmental orientation of the organization. Although Kim and Stepchenkova [41] suggested that green transformational leadership improves the organization's competence in dealing with environmental issues, there is still insufficient evidence in this area. The green transformational leaders who motivate, encourage, and inspire employees to reach the green goals of the organization can contribute to improving the organization's environmental orientation [84]. The current research proposed the hypothesis below based on the discussion above:

Hypothesis 2a (H2a). *The green transformational leadership of managers in SMEs is positively correlated with internal environmental orientation.*

Hypothesis 2b (H2b). *The green transformational leadership of managers in SMEs is positively correlated with external environmental orientation.*

2.3. Environmental Orientation and Green Absorptive Capacity

Internal environmental orientation reflects the values and ethical standards shared in the enterprise, indicating the degree of importance an enterprise attaches to environmental protection, and is usually manifested in policies for environmental protection, sustainability and integrated reports, and environmental training for employees [85]. The literature on green management demonstrates that enterprises with a high level of internal environmental orientation integrate their environmental concerns into their decision-making processes and operations and transform them into a corporate culture [44]. As specified before, internal environmental orientation is likened to a pro-environmental (green) culture [86]. Adopting a strong green culture, in which members of an organization share similar values and assumptions, can facilitate creating and disseminating green knowledge on pollution reduction opportunities, which can provide more significant benefits [87]. According to the NRBV theory, internal environmental orientation characterized as a green culture [88] represents a strategic and active organizational capability [89]. When the same environmental norms and values are accepted and shared at all organizational and functional levels of an enterprise, it becomes easier to implement concrete environmental practices [90]. Therefore, internal environmental orientation is accepted as a strategic resource [87]. Generating and disseminating environmental knowledge across all organizational and functional levels facilitate enterprises' development of the capacities and routines necessary to successfully implement environmental strategies [34,87]. The idea that green organizational culture positively impacts the green absorptive capacity has also been empirically supported [8]. In their research, Gabler et al. [36] also showed that the environmental orientation was necessary for improving eco-capability. Nevertheless, there are no studies in the literature investigating environmental orientation as an antecedent of the green absorptive capacity. As stated in the NRBV, the internal environmental orientation as a type of strategic capability can promote the resources and capabilities required for implementing green practices [34] and improve the enterprise's green absorptive capacity.

External environmental orientation denotes how the enterprise perceives and fulfills the environmental demands of its external stakeholders and expresses the image conveyed to external stakeholders [69]. According to institutionalization theory, the SMEs must struggle with various constraints put by different institutions [91]. It is possible to describe the said institutions as the external stakeholders of SMEs implementing the formal and informal rules that they must comply with in environmental management [86]. If SMEs do not carry out activities within the constraints imposed by the mentioned institutions, they cannot maintain their stability, legitimacy, and, finally, their institutional sustainability [35]. According to institutionalization theory, the current study argued that SMEs would improve their green absorptive capacities by sharing valuable information and resources with their stakeholders to reduce adverse environmental impacts [92]. It is known that enterprises with a high external environmental orientation tend to interact more with their stakeholders and become more involved in their business partners' operations to advance corporate sustainability [37] and integrate environmental activities into their supply chain management [93]. Thus, enterprises can improve their green absorptive capacity by obtaining, assimilating, and integrating novel green external knowledge [14]. Hence, SMEs with high external environmental orientation can enhance their green absorptive capacity by interacting and cooperating more with their stakeholders [93]. Accordingly, the environmental orientation, regarded as strategic orientation, can improve the green absorptive capacity since it represents an enterprise's capability to produce, disseminate, and respond to information about the natural environment [94]. From this point of view, the present study asserted that internal and external environmental orientation improves the green absorptive capacity of SMEs. Considering this, the hypotheses below were proposed in the current research:

Hypothesis 3a (H3a). *Internal environmental orientation is positively correlated with green absorptive capacity in SMEs.*

Hypothesis 3b (H3b). *External environmental orientation is positively correlated with green absorptive capacity in SMEs.*

2.4. The Mediating Role of Environmental Orientation

The leaders engaged in the green transformational leadership style influence the internal values, culture [80], beliefs, and environmental orientation of the organization [47] by revealing a shared vision, directing, supporting teamwork, and involving employees in the change process, which yields results at functional and operational levels [68].

On the other hand, individuals need support from their managers to learn and develop [95]. By exhibiting the green transformational leadership style, business owner-managers in SMEs can enable their subordinates to learn and discover the present green trends and green knowledge with effective communication techniques and enable them to be involved in decision-making processes [30] and thus improve the green absorptive capacity of the enterprise. Such leaders can support the improvement of green absorptive capacity by prioritizing a green management culture (internal environmental orientation) [41,80] and encouraging their subordinates to respond to altering market dynamics by learning from the market (external environmental orientation) [30,47]. They can also enhance the green absorptive capacity by providing their subordinates more autonomy, promoting higher self-efficacy [58], and instilling enthusiasm for generating new ideas about the natural environment [53,59].

Based on the discussion above, the current study hypothesized that when business owner-managers in SMEs display the green transformational leadership style, internal and external environmental orientation increases, improving the green absorptive capacity. The previous research has revealed that environmental orientation mediates the correlation between green transformational leadership and eco performance [41]. Nevertheless, there is no study in the literature investigating the mediating role of environmental orientation in the association of green transformational leadership with the green absorptive capacity. Therefore, the current work assumed that the correlation between the green transformational leadership of business owner-managers in SMEs and the green absorptive capacity is mediated by internal and external environmental orientation, thus contributing to theory and practice. Therefore, the hypotheses below were suggested:

Hypothesis 4a (H4a). *Internal environmental orientation mediates the correlation between the green transformational leadership of managers in SMEs and green absorptive capacity.*

Hypothesis 4b (H4b). *External environmental orientation mediates the correlation between the green transformational leadership of managers in SMEs and green absorptive capacity.*

Figure 1 displays the research framework.

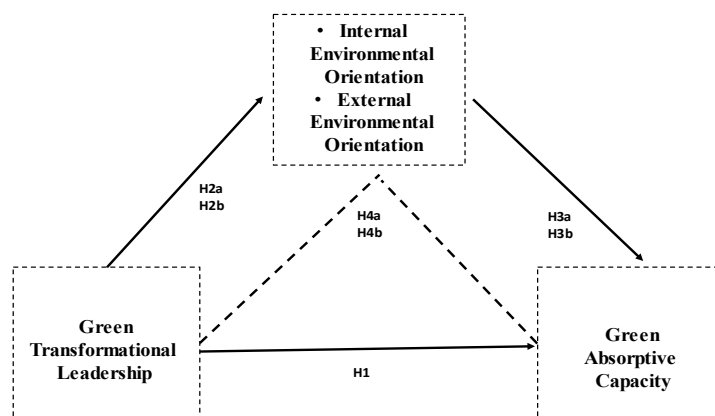


Figure 1. Research framework.

3. Research Methodology

3.1. Sample and Data Collection

The analysis unit of the present research is the enterprise level and an empirical study was carried out using the questionnaire method. The participants of this study were business owner-managers in SMEs with an ISO 14001 certificate in Turkey's manufacturing industry and managers of quality assurance, R&D, and environment departments. There are 18,236 SMEs registered with the Istanbul Chamber of Industry with an annual number of employees of less than two hundred and fifty. The list of SMEs was provided by the Istanbul Chamber of Industry. Enterprises without an ISO 14001 certificate were excluded from this sample. A total of 1000 enterprises from various sectors were determined using the random sampling selection procedure as the sampling framework. Before an e-mail was sent to the participants, a group of four experts and academicians was asked to evaluate the questionnaire and perform the necessary arrangements (first pre-test). Afterward, twenty-five enterprises with an ISO 14001 certificate were randomly selected and questionnaires were sent via e-mail to managers of the quality and assurance, R&D, and environment departments. They were asked to fill out the questionnaire and specify uncertainties about terms, meanings, and subjects (second pre-test). After the feedback was received, necessary changes were made to the questionnaire.

For the purpose of avoiding common method variance (CMV), the participants of various constructs in the present research differed. The participants of green transformational leadership were managers of environment departments and the business owner-managers were asked to assess green transformational leadership. The participants of green absorptive capacity were managers of quality assurance and R&D departments. The participants of internal and external environmental orientation were business owner-managers. The participants were reassured that the data collected would be kept confidential and utilized for research purposes only. The participants were also informed that they should respond by considering organizational practices not based on personal emotions. Moreover, as stated by Dillman et al. [96], the data collection process lasted three months, between May and July 2021, to test the non-response bias; 454 enterprises, including 373 usable, representing an effective response rate of 37.3%, which was sufficient due to the nature of the questionnaire, participated in the current study involving SMEs with an ISO 14001 certificate in Turkey's manufacturing industry. Upon examining the sectors in which the sample group operated, the enterprises operating in the textile sector constitute the largest share with 21.44%. The remaining part consisted of enterprises in the construction (19.57%), automotive (17.96%), chemical (13.67%), energy (10.18%), food (8.57%), plastic (5.63%), and packaging sectors (2.94%), respectively, most of which had between 50 and 249 employees (see Table 1).

Table 1. Firm profiles.

Demographics	Number of Respondents	%
Type of Business		
Textile	80	21.44
Construction	73	19.57
Automotive	67	17.96
Chemical	51	13.67
Energy	38	10.18
Food	32	8.57
Plastic	21	5.63
Packaging	11	2.94
Number of employees		
Less than 10	8	2.14
11–49	123	32.97
50–249	242	64.87

3.2. Measure of Constructs

To measure the constructs, a 7-point Likert scale was employed, with 1 indicating strongly disagree and 7 indicating strongly agree for all variables. All of the measurement items prepared for the present study are listed in Appendix A. The first section of the prepared questionnaire included questions to measure the green transformational leadership of business owner-managers in SMEs. The second section included questions to measure internal and external environmental orientation and the third section contained questions to measure the green absorptive capacity. The final section involved descriptive data on the number of employees in the enterprise and sector information. All constructs were measured using reflective items. A six-item scale adapted from the research by Chen and Chang [48] was used with the objective of measuring the green transformational leadership variable. Afterward, the internal and external environmental orientation was measured by utilizing four-item scales adapted from the study by Banerjee [69]. Moreover, a five-item scale adapted from the research by Chen et al. [12] was employed with the objective of measuring green absorptive capacity.

4. Analysis and Results

4.1. Measurement Model Assessment

The SmartPLS 3 analysis program, whose analysis logic is based on Partial Least Square-Structural Equation Modeling (PLS-SEM), was utilized with the objective of testing the proposed research model and hypotheses in this study. The main reason for using the SmartPLS 3 data analysis program in the current work is the possibility of testing correlations between variables simultaneously [97] and the absence of the assumption of normality since they are non-parametric. In the SmartPLS 3 analysis program, the measurement model is confirmed and then the structural model relations are calculated. To evaluate the measurement model, confirmatory factor analysis should be performed, and the reliability of constructs, convergent validity, and discriminant validity should be analyzed [98]. Because all the variables used in this study were reflective, the analyses were conducted using the Consistent PLS Algorithm/PLSc step. First, considering the factor loadings of the indicators, only the value of GAC5 indicator was less than 0.7 and this indicator was excluded from the analysis. Second, the Cronbach's alpha, composite reliability, and rho_A values of all constructs were examined. However, the composite reliability value of the GTL structure was found to be greater than 0.950. Since the factor loading of the GTL4 indicator belonging to the GTL structure was high, it was excluded from the analysis and the analysis was repeated (see Table 2). As a result, the composite reliabilities of all constructs ranged from 0.936 to 0.944, which were all below the 0.95 recommended levels for acceptable reliability [99]. Third, all latent variables provided convergent validity. Thus, the Average Variance Extracted (AVE) value exceeded the critical value of 0.50 [100].

Table 2. Measurement model results.

Constructs	Indicators	Factor Loadings	p-Values	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Green Transformational Leadership (GTL)	GTL1	0.880	0.000	0.925	0.927	0.944	0.770
	GTL2	0.871	0.000				
	GTL3	0.864	0.000				
	GTL5	0.870	0.000				
	GTL6	0.901	0.000				

Table 2. *Cont.*

Constructs	Indicators	Factor Loadings	<i>p</i> -Values	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Green Absorptive Capacity (GAC)	GAC1	0.890	0.000	0.910	0.910	0.936	0.787
	GAC2	0.886	0.000				
	GAC3	0.884	0.000				
	GAC4	0.888	0.000				
Internal Environmental Orientation (IEO)	IEO1	0.903	0.000	0.912	0.915	0.938	0.792
	IEO2	0.902	0.000				
	IEO3	0.909	0.000				
	IEO4	0.843	0.000				
External Environmental Orientation (EEO)	EEO1	0.870	0.000	0.915	0.918	0.940	0.796
	EEO2	0.897	0.000				
	EEO3	0.897	0.000				
	EEO4	0.906	0.000				

Additionally, discriminant validity was tested for all latent variables in the model by means of the Fornell–Lacker criterion and the heterotrait–monotrait (HTMT) ratio. The square root of AVE on diagonal lines in Table 3 was higher than the correlation between the constructs in the model.

Table 3. Discriminant validity results ($n = 373$).

Constructs	1	2	3	4
External Environmental Orientation	0.892			
Green Absorptive Capacity	0.537	0.887		
Green Transformational Leadership	0.491	0.754	0.877	
Internal Environmental Orientation	0.509	0.763	0.763	0.890

Note: Bold diagonal values represent the square of AVE.

The discriminant validity was also tested by utilizing HTMT and the HTMT value was below 0.85, as seen in Table 4. According to these two results, a conclusion that discriminant validity was met by all variables in the said research model can be drawn [99].

Table 4. HTMT results ($n = 373$).

Constructs	1	2	3	4
External Environmental Orientation				
Green Absorptive Capacity	0.585			
Green Transformational Leadership	0.530	0.819		
Internal Environmental Orientation	0.554	0.836	0.829	

Finally, a bootstrapping technique (5000 resamples) was used with the aim of generating the *t*-statistics, ensuring that the statistical significance of the value of the factor loadings for the indicators belonging to the latent variables was evaluated [100]. According to the *T*-values, the relationships with the hidden variable the indicators belonged to were statistically significant (see Figure 2 below).

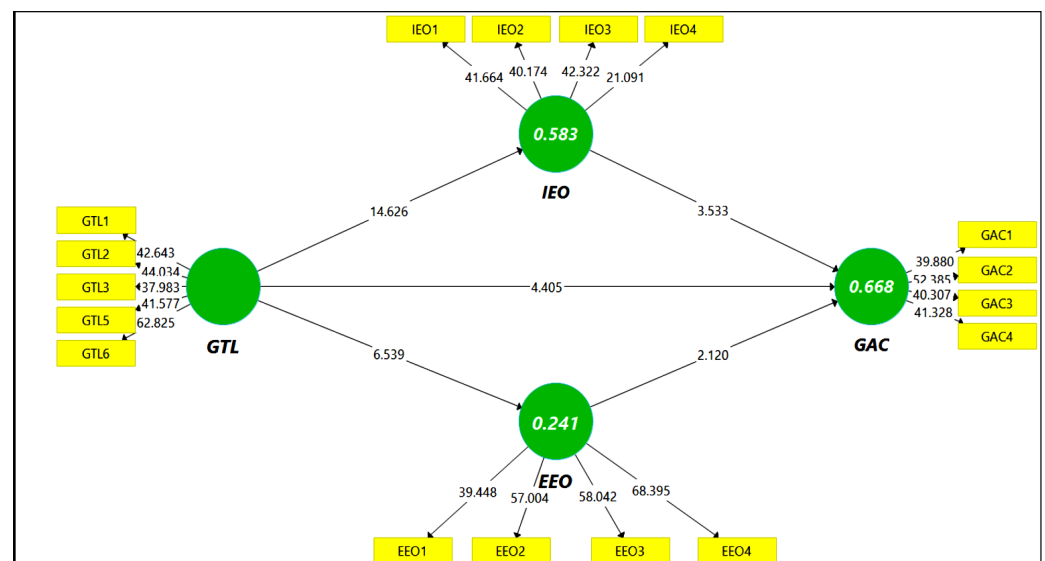


Figure 2. Assessment of the structural measurement model.

4.2. Structural Model Assessment

After confirming the reliability and validity of all latent variables in the measurement model, the Variance Inflation Factor (VIF) value was evaluated to test the collinearity of the structural model (see Table 5). Because all of the VIF values were below the threshold value of 3, it can be said that a collinearity problem between the latent variables was absent [100]. Afterward, considering the R^2 values showing what percentage of the endogenous variable was explained, the internal environmental orientation, external environmental orientation, and green absorptive capacity were 0.583, 0.241, and 0.668, respectively, and these values were accepted as good [101]. The effect size value (f^2) of every exogenous variable in the model varied between 0.048 and 1.396 and the values other than one among these values were in the medium and large category. The Q2 predictive relevance value formed excellent endogenous variables, showing that the model had predictive relevance. The fact that the standardized root mean square residual (SRMR) value was $0.058 < 0.080$ and the normed fit index (NFI) value was $0.89.9 > 0.80$ showed that our model fit the empirical data.

Table 5. Hypothesis testing on the direct effect.

Structural Path	Coef (β)	S.D.	T-Values	p-Values	Adj. R^2	f^2	Q^2	VIF	Confidence Interval (BC)		Conclusion
									LL	UL	
GTL→IEO	0.763 ***	0.052	14.626	0.000	0.583	1.396	0.455	1.000	0.621	0.836	H2a Supported
GTL→EEO	0.491 ***	0.075	6.539	0.000	0.241	0.317	0.186	1.000	0.323	0.617	H2b Supported
GTL→GAC	0.375 ***	0.85	4.405	0.000	0.668	0.171	0.517	2.480	0.208	0.541	H1 Supported
IEO→GAC	0.401 **	0.113	3.533	0.000		0.190		2.541	0.203	0.631	H3a Supported
EEO→GAC	0.149 *	0.070	2.120	0.035		0.048		1.397	0.029	0.294	H3b Supported

SRMR = 0.058; NFI = 0.899. Results of the bootstrapping with 5000 sub-samplings. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$ (two-tailed). BC = Bias-Corrected, UL = Upper Level, LL = Lower Level.

Finally, a bootstrapping technique (5000 resamples) was utilized with the objective of generating t-statistics and standard errors, allowing the evaluation of statistical significance for the correlations hypothesized in the research model [102]. In line with the path

analysis findings (see Table 5), the correlation between the green transformational leadership of business owner-managers in SMEs and green absorptive capacity ($GTL \rightarrow GAC$ $\beta = 0.375$, t ; 4.405, p ; 0.000) was determined to be positively significant and, accordingly, hypothesis H1 was supported. Moreover, according to the analysis results, the relationships between the green transformational leadership of business owner-managers in SMEs and internal environmental orientation ($GTL \rightarrow IEO$ $\beta = 0.763$, t ; 14.626, p ; 0.000) and external environmental orientation ($GTL \rightarrow EEO$ $\beta = 0.491$, t ; 6.539, p ; 0.000) were observed to be positively significant and, accordingly, hypotheses H2a and H2b were supported.

Likewise, the association between the internal environmental orientation of the enterprises and their green absorptive capacity ($IEO \rightarrow GAC$ $\beta = 0.401$, t ; 3.533, p ; 0.000) was revealed to be positively significant and according to this finding, hypothesis H3a was supported. Finally, the correlation between the external environmental orientation of enterprises and their green absorptive capacity ($EEO \rightarrow GAC$ $\beta = 0.149$, t ; 2.120, p ; 0.035) was also positively significant. According to the above-mentioned results, hypothesis H3b was supported.

This study employed the mediator analysis procedure proposed by Zhao et al. [103] was employed in the PLS-SEM structural models. The findings showed that the relationship between $GTL \rightarrow IEO \rightarrow GAC$ ($\beta = 0.306$, t ; 3.136 p ; 0.002) was positively significant. Moreover, the relationship between $GTL \rightarrow EEO \rightarrow GAC$ (β ; 0.073, t ; 2.008, p ; 0.045) was also positively significant. According to these findings, it can be stated that IEO and EEO play a mediating role. To determine the type of this mediation, the direct association between GTL and GAC ($\beta = 0.375$, t ; 4.405 p ; 0.000) was assessed and, as a result, it was revealed that IEO and EEO played the complementary partial mediation role (see Table 6). In line with this, hypotheses H4a and H4b were supported.

Table 6. Hypothesis testing on mediation.

Structural Path	Coef (β)	S.D.	T-Values	p-Values	Confidence Interval (BC)		Conclusion
					LL	UL	
$GTL \rightarrow IEO \rightarrow GAC$	0.306 *	0.098	3.136	0.002	0.143	0.497	H4a Supported Complementary Partial Mediation
$GTL \rightarrow EEO \rightarrow GAC$	0.073 *	0.036	2.008	0.045	0.015	0.161	H4b Supported Complementary Partial Mediation
$GTL \rightarrow GAC$	0.375 **	0.085	4.405	0.000	0.208	0.541	

** $p < 0.001$; * $p < 0.05$ (two-tailed). Results of the bootstrapping with 5000 sub-samplings. BC = Bias-Corrected, UL = Upper Level, LL = Lower Level.

5. Discussion, Contributions, and Limitations

5.1. Discussion

The current research investigated the relationships between green transformational leadership, green absorptive capacity, and environmental orientation (internal and external) in manufacturing SMEs. The study contributed to our understanding by demonstrating the importance of green transformational leadership and environmental orientation (internal and external) in supporting the improvement of green absorptive capacity in manufacturing SMEs. In light of the empirical literature, four main correlations were assumed in the current work. First, based on social learning theory, the present research argued that the green transformational leadership of business owner-managers could motivate manufacturing SMEs to enhance the green absorptive capacity. Second, according to upper echelons theory, this study assumed that green transformational leadership could be an internal facilitator to promote internal and external environmental orientation. Third, according to the NRBV and institutionalization theory, the present research suggested that internal and external environmental orientation enhanced the green absorptive capacity. Fourth, the current study researched the mediating effect of internal and external environmental orientation in the correlation between the green transformational leadership and green absorptive capacity among manufacturing SMEs.

First, the findings demonstrated that the green transformational leadership of business owner-managers in SMEs significantly and positively affected green absorptive capacity. The above-mentioned result confirms the empirical research in the business management literature addressing the correlation between the transformational leadership style and absorptive capacity [23,24,26,47,104] and this is the first research in the green management literature that discusses this correlation. Furthermore, this result coincides with the idea that green transformational leaders facilitate exploratory and exploitative learning [66] and improve green dynamic capabilities [18].

Second, the results indicated that the green transformational leadership style significantly affected internal and external environmental orientation. This finding supports studies arguing that green transformational leaders develop the competencies of organizations in addressing environmental issues [41]. Furthermore, the said result is in line with the studies confirming the idea that green transformational leaders support the development of corporate environmental strategies [57,105,106].

Third, the results demonstrated that internal and external environmental orientation enhanced the green absorptive capacity. This result supports a study indicating the green organizational culture as an antecedent of green absorptive capacity [7]. Thus, as mentioned earlier, internal environmental orientation resembles a green organizational culture. On the contrary, this result also confirms the findings of a study demonstrating a positive correlation between the interaction with the external environment and absorptive capacity [104]. It is stressed in the literature that open communication and cooperation positively impact absorptive capacity [107]. An enterprise inspired by a strong internal and external environmental orientation can enhance its green absorptive capacity by expanding the scope of monitoring the dynamic evolution of environmental corporate forces and internalizing the knowledge in question through inter-functional coordination [108].

Fourth, according to the results, the internal and external environmental orientation partially mediate the correlation between green transformational leadership and the green absorptive capacity. The above-mentioned results demonstrated that internal and external environmental orientation were two important ways to implement green transformational leadership to enhance green absorptive capacity.

5.2. Theoretical Contributions

The number of studies on green transformational leadership has been continuously increasing in academia in recent years. However, no study has yet discovered the interaction between the green transformational leadership, internal and external environmental orientation, and green absorptive capacity. The present research introduced a unique framework for examining the important antecedents of green absorptive capacity and thus filled the research gap. Social learning theory, upper echelons theory, institutionalization theory, and the NRBV constitute the basis of the theoretical model. The framework was empirically examined using data from manufacturing SMEs in Turkey. The results of the current work presented various theoretical implications. First, the current work is the first that investigated green transformational leadership as a leading variable of green absorptive capacity, unlike the previous research. Using social learning theory to investigate the said relationship, it advances the theory by demonstrating that the green absorptive capacity is successfully enhanced when business owner-managers in SMEs display the green transformational leadership style. In line with social learning theory, there is a higher possibility that business owner-managers in SMEs will become role models because of their status [66]. Hence, when they display the green transformational leadership style, their subordinates can learn novel knowledge and behaviors by following them. In other words, they can improve the enterprise's green absorptive capacity by improving their subordinates' capabilities to think about environmental subjects, enriching their environmental knowledge, and encouraging them to improve environmental skills [55], take smart risks, and make creative observations [67].

Second, according to upper echelons theory, the present study utilized the green transformational leadership of business owner–managers in SMEs as an important antecedent of internal and external environmental orientation. Upper echelons theory refers to the primary role of top management in establishing relationships with stakeholders, guiding the enterprise’s strategic decisions, and playing a determinant role in adopting the key initiatives [109]. In other words, in line with this theory, when senior managers adopt the green transformational leadership style, internal and external environmental orientation will improve owing to their environmental beliefs and personal ideologies. Although the strategy literature underlines the importance of senior management, it does not receive sufficient attention in the green management literature and yields mixed findings [110]. The present study expanded upper echelons theory in a more systematic and comprehensive way, indicating that business owner–managers in SMEs support the development of internal and external environmental orientation when they display the green transformational leadership style.

Third, the present study contributed to the literature by addressing internal environmental orientation as a strategic resource, which, according to the NRBV, reflects an enterprise’s moral norms, internal values, and responsibility for environmental protection, as an antecedent of green absorptive capacity [111]. The study demonstrated that environmental protection behaviors and sharing knowledge about the natural environment would be promoted, activities for environmental protection would be included in everyone’s daily routines, an atmosphere of full participation in environmental protection would be created [71], and, thus, the improvement of green absorptive capacity will be supported in SMEs with an environmentally sensitive culture.

Fourth, the current research expanded the literature using external environmental orientation as an antecedent of the green absorptive capacity based on institutionalization theory. According to institutionalization theory, business managers must carry out their business under a series of external pressures influencing their choices and practices [112] and carry out their activities and gain legitimacy in line with the pressures from institutional actors (government, competitors, customers, non-governmental organizations, etc.) [113]. Moreover, enterprises can improve their green absorptive capacity, enabling them to obtain green knowledge from these corporate actors because they are in contact with them [114], assimilate, integrate, and use it. By referring to institutionalization theory, this study expanded the theory by showing that external environmental orientation [113] expressing the need to perceive corporate actors’ environmental expectations and to meet these expectations by managers of SMEs can catalyze the development of new green knowledge such as the enterprise’s green absorptive capacity and green knowledge-related dynamic capabilities [115]. In other words, since SMEs with higher external environmental orientations aim to bring their environmental influence to a minimum, maximize the efficiency of resources, and meet the expectations of corporate actors [116], they try to invest in improving green absorptive capacities to recognize, acquire, assimilate, and use green external knowledge [114,117].

Fifth, the present research demonstrated that internal and external environmental orientation partially mediates the correlation between green transformational leadership and the green absorptive capacity. The finding in question contributes to the current literature by indicating that managers should adopt green transformational leadership behavior and promote internal and external environmental orientation for SMEs to enhance their green absorptive capacity.

5.3. Managerial Implications

Improving the green absorptive capacity assists SMEs with identifying, assimilating, integrating, and using both internal and external green knowledge [6]. This study presented practical implications for managers by indicating how SMEs could enhance their green absorptive capacity to contribute to environmental protection and sustainable economic growth. First, the current study demonstrated that the green transformational leadership of

business owner–managers in SMEs could increase the green absorptive capacity of the enterprise. The mentioned finding underlined the need for managers of SMEs to be aware of the crucial role of displaying the green transformational leadership style, required to improve green absorptive capacity. Managers of SMEs should include the green transformational leadership style in their strategic plans regarding the natural environment if they want to enhance their green absorptive capacity. Second, the present research indicated that green transformational leadership promotes internal and external environmental orientation. Managers of SMEs must demonstrate a high degree of green transformational leadership and clearly articulate their strong environmentally oriented values, green vision, and goals. Additionally, managers must define the internal environmental protection process, establish policies, and develop environmental training for employees [118]. Third, the present study demonstrated that internal and external environmental orientation positively influences the green absorptive capacity. Fourth, this work showed that the green transformational leadership of managers in SMEs not only directly impacts their green absorptive capacity but also indirectly affects it through internal and external environmental orientation. In accordance with the mentioned findings, managers of SMEs can develop a green knowledge sharing system to strengthen internal communication and information exchange and can strengthen their communication with stakeholders to assimilate different new green knowledge. Thus, they can help employees acquire more green knowledge and different experiences. Furthermore, managers of SMEs should adopt the green transformational leadership style, become role models for their subordinates, and focus on integrating environmentalism into the entire organization. Hence, these leaders should build a strong green culture by presenting a green vision and establishing a collaborative atmosphere in which environmental values are shared to help recognize, assimilate, transform, and use new green knowledge.

5.4. Limitations and Future Research

The current work has several limitations opening up novel ways for further studies. First, the present research focused on SMEs registered with the Istanbul Chamber of Industry in Turkey. Future researchers can replicate the current study by focusing on SMEs from other countries. Second, the current work utilized cross-sectional data for the purpose of testing the hypotheses. Therefore, researchers can develop a longitudinal study to further investigate and assess the development of green absorptive capacity over time. Third, the present study addressed two internal drivers of green absorptive capacity, green transformational leadership, and (internal and external) environmental orientation. However, future research can address the role of other internal factors, e.g., organizational capabilities, organizational structure, and resource availability. Finally, solely the questionnaire survey method was employed in the present work. In the future, researchers can conduct in-depth interviews with case studies on SMEs registered with the Istanbul Chamber of Industry in Turkey, which can assist with a better understanding of the real conditions of enterprises in terms of the correlation between green transformational leadership, environmental orientation, and green absorptive capacity.

6. Conclusions

The present research demonstrated that the green transformational leadership of business owner–managers in SMEs supports internal and external environmental orientation and green absorptive capacity. Additionally, there is a positive and significant correlation between internal and external environmental orientation and green absorptive capacity. Moreover, the present study confirmed that mediations of internal and external environmental orientation were synergetic to translate the effect of the green transformational leadership of business owner–managers on green absorptive capacity in SMEs. The study presented a framework for business owner–managers in SMEs to display the green transformational leadership style and promote internal and external environmental orientation with the objective of promoting the green absorptive capacity.

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Appendix A

Appendix A.1. Green Transformational Leadership

GTL1 Our management inspires the members of the organization with environmental plans.

GTL2 Our management provides a clear environmental vision for the organization's members to follow.

GTL3 Our management gets the organization's members to work together for the same environmental goals.

GTL4 Our management encourages the members of the organization to achieve environmental goals.

GTL5 Our management acts by considering the environmental beliefs of the organization's members.

GTL6 Our management stimulates the organization's members to think about green ideas.

Appendix A.2. Green Absorptive Capacity

GAC1 The organizational structure of the firm can understand, analyze, and interpret information from external environmental knowledge.

GAC2 The firm can communicate environmental knowledge across its units.

GAC3 The firm can combine existing environmental knowledge with the newly acquired and assimilated environmental knowledge.

GAC4 The firm can recognize, value, and acquire external environmental knowledge that is critical to its operations.

GAC5 The firm can successfully commercialize new external environmental knowledge.

Appendix A.3. Internal Environmental Orientation

IEO1 Our firm exerts concerted efforts to allow each employee to understand the importance of environmental preservation.

IEO2 Our firm has clear policy statements urging environmental awareness in all areas of operation.

IEO3 Our firm members highly value environmental preservation.

IEO4 Environmental preservation is a central corporate value of our firm.

Appendix A.4. External Environmental Orientation

EEO1 The developments in the natural environment affect our firm's business activities.

EEO2 The financial well-being of our firm depends on the state of the natural environment.

EEO3 Environmental preservation is vital to our firm's survival.

EEO4 Various external stakeholders expect our firm to preserve the environment.

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