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Research Article

Driving Eco-Innovation through Green Transformational Leadership: The Power of Employee Voluntary Green Behavior

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Abstract

Keeping in view the increasingly importance of environmental preservation, organizations tend to focus more and more on sustainable business practices. Accordingly, employees green practices such as eco-innovation can contribute significantly towards the preservation of the environment. Hence, it is very crucial to study how companies such as banking sector enhance employees green innovation or eco-innovation to solve environmental problem. For this purpose, the present study has examined the variables that might be the potential predictors of employees' eco-innovation. An important contributor to employee eco-innovation is green transformational leadership, which was the focus of this study. Moreover, this study verified the underlying mechanism that leads transformational leadership to employees' eco-innovation through the role of employees' voluntary green workplace behavior. Hypotheses were presented based on social identity and social exchange theory. Data were collected from 150 workers of private and public banks in the Hazara region by convenience sampling. Results confirmed the positive impact of Green Transformation Leaderships on Eco-Innovation. Moreover, the findings also confirmed the significant mediating impact of EVGB between the links of Green Transformation Leaderships Eco-Innovation. These findings have important implications for both academics and bank management like, to strengthen their green creativity, using green transformational leadership to establish a green corporate identity would need a large commitment of resources. If the organization wishes to drive employee eco-innovation, it must connect the concept of green transformational leadership to its long-term development sustainability. When individuals embrace voluntary green workplace behaviors, eco-innovation rises.

Key Words

Green Transformational Leadership, Eco-Innovation, Employee Voluntary Green Workplace Behavior

Introduction

The increasing number of firms adopting pro-environmental practices has enabled them to become both competitive and green. Environment dynamics in a globalized economy profoundly alter the global commercial relationships, strengthening subject interaction. Improved environmental sustainability and better management of natural resources are two of the most

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important factors for economic development and social advancement (Morhatsky & Terletsky; Tchigvintsev et al., 2015).

Innovation is a popular topic in academic circles as well as the business world. Organizations have grasped the fact that firms can no longer survive and succeed in a competitive environment without concentrating on the concept of innovation to increase the effectiveness and efficiency of company operations (Tan & Nasurdin, 2011). Global climate change and natural resource shortages have compelled companies to go beyond simple innovation and adopt environmental stewardship as a core value (J Petts, 1998). To put it another way, businesses must prioritize green innovation(Song & & Yu, 2018).

Eco innovations include technology for boosting energy savings, improving recycling rate, advances in renewable energy, green architecture, ecological transportation, resource and waste management, and material recycling (Babenko, 2020). Foreign scientists such as (Escamilla & Habert, 2014; Spangenberg et al., 1996; Taylor et al., 2006; Westlander & Åberg, 1992). Gorini is working on the creation and operation of alternative energy and, in particular, eco-innovations. Ukrainian scientists such as (Babenko, 2020; Goncharenko & Shapoval, 2021; Kupalova et al., 2021; Ramazanov et al., 2019; Rayevnyeva & Touzani, 2021; Wu et al., 2021; Zakrutkin et al., 2016; Zelinska et al., 2021). Despite scientists' substantial contributions to eco-innovation research, This should be mentioned that eco-innovation influences the economy as just a factor, making it feasible to boost a town's or economic growth of the country inside the worldwide arena. As a result, eco-innovation is becoming a deciding element in the long-term growth of an inventive economy.

However, is a difficult issue to answer to inject green innovation and green behaviors throughout the business (Janszen & & Janszen, 2000). In the view of scholars, workers may have a substantial effect on fostering innovation in their companies (Kang & & Lee, 2017).

Eco-innovations, like some of the other technological innovations, must contribute to increased efficiency, reducing environmental impact, and achieving environmental protection, which is comprehended as being one of the components of the global defense, a collection of natural, socioeconomic, technological, as well as other circumstances that make sure the life quality and security. The life and activities of the people who live in a certain place are extremely important. A primary benefit of utilizing and monitoring eco-innovation include 1) computation and predicting of institutions' efforts in the areas of eco-innovation, customer behavior, as well as the advancement of "cleaner" manufacturing; 2) identifiers of motivators and obstacles to a formation and maintenance of eco-innovation needed for the development of efficient tax and economic deals; and 3) trying to raise awareness of the environmental innovation between many stakes - holders and evaluators. 4) assisting societies in breaking the causal relationship between economic growth and environmental degradation; 5) attempting to create a demand for environmentally friendly products and ways of life. Previously, scholars have attributed the role of various leadership styles in innovation in general (see e.g, Elrehail et al., 2018; Semuel et al., 2017; Zuraik & Kelly, 2019) and eco-innovation in particular (Bahzar, 2019).

in this sense, leadership also plays a very important role (J. Zheng, G. Wu, H. Xie, & H & Li, 2019). Many experts, however, have approved numerous leadership paradigms, including transformation leadership (Xingdong Wang et al., 2018) value congruence (Graves & Sarkis, 2018), transactional leadership (Graves et al., 2019), ethical leadership (Zhang et al., 2016), spiritual leadership (Afsar et al., 2016)and responsible leadership (Zhao & Zhou, 2019) with individual voluntary green behavior.

Transformational leaders, in particular, have been dubbed more important and successful in achieving corporate goals since they participate in motivating others rather than pushing (Choi et al., 2016). As a result, green transformational leadership will be more effective at encouraging behaviors that will lead to green innovation (Khalili, 2016). Consequently, transformational leadership (TRL) is seen to be necessary to assure green organizational behaviors and practices in terms of the invention (Khalili, 2016). (Bass & B.M., 1985) defined transformational leaders as supervisors who inspire followers to outperform expectations. Of that kind, leadership is seen to

be self-motivated and realistic, capable of inspiring their subordinates to accept change(R.G, 2009). Correspondingly, (Khalili, 2016) highlighted the impact of TRL in fostering a culture of creativity and innovation in businesses. The existence of inspiration and novelty in a company's operations can broaden organizational methods of task completion and aid in the recognition of successful environmental management techniques via efficiency gains in the form of innovation. More firms are being challenged to pay greater attention to utilizing green services like green leadership and Eco-Innovation as the environmental debate has become a widely accepted notion for global environmental change(Chen & Chang, 2013). This study discusses the significance of the firm's management skills and expertise in sustainable management. The significance of environmental management lies in the ability of leaders to articulate strategies that can help institutions create competitive advantages. Various attributes of leadership were studied, and among them, transformational leadership was found closely related to innovation and creativity (Bahzar, 2019). Transformational leadership is also regarded as an important tool to reassure green organizations of their practices and behavior. For instance, it is believed that by encouraging their subordinates to perform better than expected, these leaders are able to lead them to embrace changes(Ahangar, 2009). Likewise, Khalili (2016)state the importance of transformational leadership keeping a firm's traditions and practices alive in order to encourage creativity and innovation in the workplace. Thus, the proposed study would examine the potential role of Green Transformation Leadership in enhancing employees' workplace EI. Because Green Transformation Leadership possesses the ability to provide an environment that encourages individuals to carry out environmental objectives and goals and work more than their formal job description towards the safety of the environment. management is more concerned with encouraging Eco-Innovation among their workers to create innovativeness (Chen & Chang, 2013; Q. Zhu et al., 2013). according to (Shalley & & Oldham, 2004) Employee innovation is seen as a significant factor since it shows the individual's qualities and capacity to do his or her tasks in any situation. Green Transformational Leaders enable employees to acquire new knowledge and engage in green processes & innovation-related activities (S. H. Han et al., 2016; Phong Ba Le & Hui Lei, 2018). They mainly focused on increasing the firm's environmental performance by employee green workplace behavior (Dranev et al., 2018; Martinez-Conesa et al., 2017).

Furthermore, Green Transformational Leaders inspire and motivate followers to carry out environmental aims and goals, as well as urge them to do more than they expect to achieve environmental performance, such as eco-innovation. As a result of Green Transformation Leadership's efforts, workers are encouraged to learn new information(S.-h. Han et al., 2016; Phong Ba Le & Hui Lei, 2018)and get engaged in green process & product innovation activities that allow the company the opportunity to bring new green goods and/or services to its customers(Constantine Andriopoulos & Marianne W Lewis, 2010). Research suggests that managers of banks must carry out green behavior that transforms to their subordinates (Chen & Chang, 2013), to make in addition to support inward capabilities vital for green innovative activities.(Chen & Chang, 2013; Shunyi Zhou et al., 2018)several previous studies recommend that firms need to put into practice Green Transformation Leadership to insist on colleagues to display green work behavior towards the achievement of green performance(Chen & Chang, 2013; Chen et al., 2006). Other than this, the Green Transformation Leadership upholds and energizes workers' green passion. (Jia et al., 2018), ECO INNOVATION (Chen & Chang, 2013; Jia et al., 2018), green innovation(Chen & Chang, 2013; Shunyi Zhou et al., 2018); and Green Firm Performance(Chen & Chang, 2013; Chen et al., 2006). Drawing upon the resource-based view, leadership is observed as the main resource in ecological management in the organization (Guest & Teplitzky, 2010; Shunyi Zhou et al., 2018), Additionally, transformational leadership (TRL) is often seen as important to ensure green organizational practices and behaviors in terms of Eco-Innovation and innovation (Khalili, 2016). among different forms of leaders style, transformational leadership involves making or establishing an innovative atmosphere, encouraging, stirring & motivating coworker confidence in and knowledge of a leader's vision, which has a major impact on business innovation and performance (Boehm et al., 2015; Mittal & Dhar, 2016; Ng, 2017). Various attributes of leadership was studies, and among them transformative leadership was found closely linked with innovation and creativity

Nevertheless, the role of Green Transformation Leadership has previously been endorsed by few scholars in enhancing EI (Bahzar, 2019), however, the mechanism through which Green Transformation Leadership effect EI is still not fully explored. This study would, therefore, examine the role of employees' voluntary green work behavior as the underlying mechanism that links Green Transformation Leadership to EI. Since organizations are increasingly aware of the significance of employee engagement in a greening organization, studies have focused on the relationship between green behavior at work and organizational performance (Kim et al., 2019). EVGWP is defined as the act of employees that contribute towards environmental sustainability such as; "saving office supplies, keeping trash at bay, and communicating about environmental sustainability within the organization". Previously, employees' EVGWB was examined with leadership (Kim et al., 2017), perceived organizational support (Lamm et al., 2015), and pro-environmental attitude (Bissing-Olson et al., 2013). Moreover, the role of VGWB has also been endorsed in Eco-innovation by (Cai et al., 2020). With the same notion, it can be argued that VGWB can be the potential mediator between Green Transformation Leadership-EI.

Problem Statement

Due to worldwide climatic change and reduction of natural resources, day by day organization has to adopt some changes to be responsible environmentally(Judith Petts, 1998). In other words, organizations are required to focus on eco-innovation (Song & Yu, 2018). Scholars have outlined that employees can make a significant impact in facilitating organizations to be innovative (M. Kang & M.-J. Lee, 2017) whereby, leadership also has an important role to play in this regard (Junwei Zheng et al., 2019). In particular, transformational leaders have been termed more significant and effective in attaining organizational ends as they engage in inspiring individuals rather than forcing (Suk Bong Choi et al., 2016). Hence, one can assert that green transformational leadership will be more effective in furthering green behaviors' that would cause eco-innovation (Khalili, 2016). Previously the majority of work had been done on Green transformational leadership and eco-innovation in the context of tourism and hospitality. On the contrary, Jeucken (2010)asserts that banks and financial institutions have witnessed a slow environmental awareness compared to other industry since such institutions overall regard themselves to be a fairly environmentally friendly sector. Moreover, the activities and operations of financial institutions such as banks largely effect the environment. Consequently, the use of study, energy, water and the quantity of waste they generate during their operations must not be ignored. Therefore, it is important to examine that how banking sector encourages their employees for eco-innovation. Therefore, knowing that institutional creativity and innovation are fueled by strong leadership the current study is aimed to explore the role of Green Transformation Leadership in enhancing EI through EVGB.

Research Questions

The following research questions would be addressed in the current study.

1. How does Green Transformation Leadership influence eco-innovation?
2. How does Green Transformation Leadership influence employees' Voluntary Green workplaceBehavior?
3. What role does employee green workplace behavior play in eco-innovation?
4. Whether employee green workplace behaviors considerably mediate the association of Green Transformation Leadership and Eco-Innovation?

Literature Review and Hypothesis Development

Green Transformation Leadership and Eco-Innovation

Green Transformative leadership is a significant factor in green performance, according to the findings of this study. There has been no prior investigation on the link between green

transformative leadership and green performance. In transformational leadership, the leader inspires people to take initiative and use their creativity(Gong et al., 2009; Mittal & & Dhar, 2015). Institutional eco-friendly activities will also have green opportunities, inspiring them to accept ecological management to improve their green reputation and market competition (Chen, 2008; Porter & Van der Linde, 1995). We used the idea of "green transformational leadership," which has been defined as "leadership behaviors that encourage and inspire followers to accomplish environmental goals and go above-predicted levels of environmental performance" by (Bass, 1998; Chang & Chen, 2013; Gardner & Avolio, 1998) green transformational leadership is connected to green innovation in the electronics sector(Chang & Chen, 2013). Transformational leaders may inspire their teams by presenting an inspiring vision that pushes them to go above and beyond their normal duties(J.E.; Bono & T.A. Judge, 2003). A motivating vision can not only point to a bright future but also show people how they can make progress toward that future while still doing their current employment (Arendt, 2009a). Businesses must invest in creativity and innovation to maintain competition and profitability in today's rapidly evolving environments (Khalili, 2016).E-inn is define as the process that develop and implement strategies that help organizations to reduce their environmental impact. It is often referred to development of as the more eco-efficient goods and services (Khan et al., 2018; Taştan & Davoudi, 2017). The firm's management capabilities and expertise are viewed as important in this sense for the prospect of long-term management. Environmental management's motivations are increasingly dependent on good leadership, helps institutions formulate competing environmental management practices that benefit both the company and the environment. Various attributes of leadership was studies, and among them TLSHP was found closely linked with innovation and creativity (Bahzar, 2019). Transformational leadership is a valuable instrument for green organizations to assure themselves of their practices and behavior. These leaders are more likely to show respect for people, ecosystems as a result. They also play a vital role in promoting sustainability operations to guarantee businesses have enough least amount of negative environmental impacts.

In addition to empirical studies, the theory of componential creativity (Amabile, 1997) stated that "all individuals with normal capabilities can do at least moderately creative work in some area, some of the time and that the social context (the workplace) may impact both the level and the frequency of creative activity." According to this idea, domain-relevant talents (such as technical abilities, knowledge, and competence), creativity-relevant processes (such as cognitive style, risk-taking, and creative problem solving), and task motivation all exist inside each individual (i.e., passion and intrinsic motivation). The fourth factor, on the other hand, has to do with the work environment in which employees are situated. Creativity would be the highest when a person having a high level of knowledge and innovative thinking operates in an exceptionally creative work environment.

The componential theory of creativity is an all-encompassing description of the psychological and social required components for just individuals to generate creative work. The hypothesis is based on a definition of creativity as the generation of ideas or outcomes that are both original and relevant to some purpose. According to this idea, each creative response requires four parts: three inside the individual—domain-relevant abilities, creativity-relevant processes, and intrinsic task motivation—and one outside the individual—the social context in which the individual is working. The present form of the idea includes organizational innovation and creativity, with consequences for managers' work environments(Amabile, 1997).

theory of componential creativity (Amabile, 1988) also provides support to the claim that leaders provide the required social work environment that fosters' individual eco-innovative behavior. Thus, the above empirical and theoretical discussion leads us towards the development of the first hypothesis of the study.

H1: Green Transformation Leaders can play a Positive and Significant Role in Eco-innovation.

Green Transformation Leadership & Employees Voluntary Green workplace Behavior

Green Transformation leadership inspires subordinates to accomplish environmental aims and objectives, which results in performance above expectations and green innovation as a consequence (Chen & Chang, 2013). As a result, managers with green Transformation leadership may have the full backing of upper management and HR procedures that are green-oriented. Green Transformation leadership has been well recognized in the literature for its importance in promoting environmentally friendly behavior among employees (Mittal & Dhar, 2016; Robertson & Carleton, 2018; X.; Wang et al., 2018). Transforming leadership into an environmental performance that goes above and beyond expectations is what is meant by the term "green transformational leadership" (Chen & Chang, 2013). On the contrary, mindfulness is defined as the level of attention to detail, openness to alternative viewpoints, and receptivity to shifts in the situation (Langer, 1997).

Green behavior can describe as green practices that have a significant impact on the environment. (Unsworth et al., 2013). Employee green behavior, stated as (De Roeck & Farooq, 2018), involves "employees' interest in green activities, including employees' efforts to conduct work in an environmentally friendly manner (e.g., recycling, rational use of resources, involvement in environmental initiatives, and the establishment of more sustainable policies)."Green behavior, according to (Stern, 2000), is deliberate behavior that helps to decrease the harmful effects of human resource decisions on the environment. Moreover (Ones & Dilchert, 2012) determined that EGBs are quantifiable behaviors that are related to Environment Sustainability. According to (Ones & Dilchert, 2013), Employee Green Behavior are created when proactive activities are done as part of an individual's job. Researchers are constantly interested in employee behaviors' at work, both good and bad behaviors that have an impact on the workplace environment. According to previous research Employees' green behavior is influenced by both work-related and non-work-related behaviors', (Muster & Schrader, 2011).

Besides all this literature Broaden and build theory (B&B) of positive emotions proposes, that those who have supportive leaders exhibit more positive energy, which leads to consistency in conduct and attitudes (Fredrickson, 2001). Positive feelings have little direct survival value since they divert the mind's attention away from pressing requirements and pressures. Nevertheless, talents that extend behavior and strengthen through time improve survivability. Interest in a landscape, for example, develops into navigational expertise, and good encounters with a leader develop into a supportive bond with the leader. According to Fredrickson, the resources gained by pleasant emotions outlast the emotions from which they were derived. Resources accumulate throughout time and contribute to an individual's overall well-being. This generates a favorable cycle in which increasing well-being leads to more good emotions, which leads to increased resilience, which leads to increased well-being. Pleasure is not merely a byproduct of success and high-functioning behavior, but also a prerequisite for it. According to previous studies, leaders' moral attitudes can influence employees' moral attitudes, leading the latter to adopt green workplace practices of their own (Kim et al., 2017).

As a result of this debate, we can deduce that:

H2: Green Transformation Leadership significantly affects the employees' Voluntary Green workplace Behavior

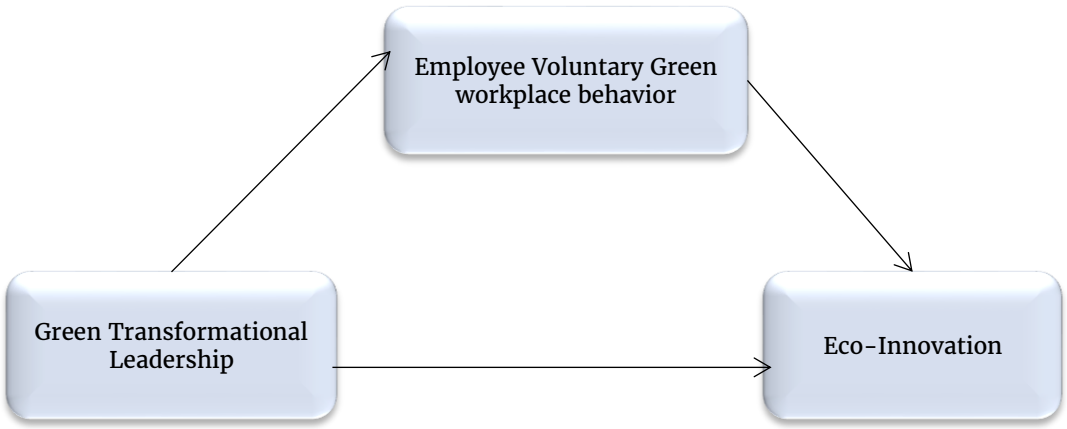
Mediating role of Employees Voluntary Green Workplace Behavior

The impact of Green Transformation Leadership and the process by which it works to affect EVGWB have been noticeably absent from the researchers' attention. Individual activity is one of the most significant determinants in environmental protection, according to researchers (Lévy-Leboyer et al., 1996). "ordinary employees' voluntary participation in innovation practices inside an organizational framework that contribute to environmental improvements" (Buhl et al., 2016). Furthermore, scholars (Boiral, 2005; Ones)argue that employee participation is critical to the

success of organizational environmental initiatives. Ordinary workers, according to (Beard & Hartmann, 1997), are a significant source of environmental innovation and imagination. Previously, employees voluntary green workplace behavior was examined with leadership (Kim et al., 2017), Perceived Organizational Support (Lamm et al., 2015), and Pro-Environmental Attitude (Bissing-Olson et al., 2013). Moreover, the role of green workplace behavior has also been endorsed in tram innovation by (Cai et al., 2020). With the same notion, it can be argued that GWB can be the potential mediator between of Green Transformation Leadership-EI. Prior studies show that leadership can influence employee moral views, which in turn effect voluntary green behaviors's, in the area of employee green behaviors'(J. Park & H. J. Kim, 2014). Other study conducted has shown that the link between green behaviors'al intentions and subsequent green behaviors's of employees is good just when employees experience a favourable green psychological climate (Norton, Zacher, Parker, & Ashkanasy, 2017). Unfortunately, the processes by which employees' pro-environment attitudes and behaviors's are elicited are still a mystery. We aim to address this research void on the relational drivers of sustainability by looking at how company leadership influences employee green behaviors'. Previous studies shows the relationship EVGWB with Green Transformaiton Leadershipshp and EI (Horbach & Jacob, 2018; Kim et al., 2017; Li et al., 2019; Saleem et al., 2021; Shunyi Zhou et al., 2018).A multilevel model of voluntary workplace green behaviors' was created and tested by (Kim et al., 2017) to explain why employees participate in green behaviors' at work. 325 office workers were divided into 80 work groups in three companies, and found conscientiousness and moral reflectiveness were related with the voluntary workplace green behaviors' of group leaders and individual group members.

Besides all this our hypothesis is supported by the theory, To learn new behaviors', people often imitate and observe the behavior of others, according to this theory of social behavior and learning. Learners learn through observation, a direct coaching, or a combination of the two, even if reinforcement is not provided directly. In addition to observing behaviors', learning occurs through the observation of punishments and rewards, a method known as vicarious reinforcement. According to social learning theory, social conduct is learned through seeing and copying the behaviors of others.

H3: Employee green workplace behaviors significantly mediate the association of Green Transformation Leadership and eco-innovation.



Theoretical Framework

Figure 1:

Conceptual Framework

Research Design and Methodology

The study design, technique, and analysis procedures were described in this chapter. A theoretical result of the environmental weariness in the Pakistani banking industry is the conceptual model and problem. Furthermore, using a quantifiable survey, bank workers' views were obtained, and the model that influences Green Transformation Leadership on environmental innovation through a voluntary green workplace was scientifically assessed. The conceptual framework, theories, constructions, sampling, data collection, and statistical measurements and procedures are all covered in this chapter. In addition, ethical principles and qualitative notions are explored in this part. Because of the deductive method in the present study, Quantitative data are obtained using a survey design. Data were obtained from private and public bank workers in the Hazara area in Kpk Pakistan with the use of the adopted questionnaire.

Population and Sample Size

The present sample is made up of employees of a bank in the Hazara area of Pakistan. Supervisors and workers who are directly or indirectly involved in eco-innovative activities were surveyed, and their replies were compiled. Indirectly and directly, these banks have an impact on the environment. According to (Hair et al., 2006), The sample size per variable/construct will be 5 to 15 observations. A total of 150 workers from banks were surveyed for this study. Three factors are included in the analysis. Qualified bank workers in the Hazara area of KPK were given 250 questionnaires to complete as part of the study. On the whole, 195 questionnaires were returned to the surveyors, with 150 of them being approved for final analysis. Only a few missing data (between 2 and 4 percent) were substituted using mean statistics

Participants and Procedures

This research provides a descriptive technique for the collection of information to access the confidence, skills, ideas, and behavior of the respondent according to the elements of the research. Data from staff and management from private and public banks of Hazara KPK in Pakistan was gathered for this study. These banks have a history of activities linked to eco-innovation. Sampled staff was taken in the Hazara area. With the help of certain study supporters, the framework was being self-administrated. Replies were anonymously collected and participants were guaranteed privacy of the information supplied. A short report to the review study was included to ensure that all members are willing to collaborate and that the study only focuses on (important) research and ensures the anonymity of their responses. They have aimed to avoid appealing tendencies in the social quality. There were two survey tools developed and managed for this study: one for employees, and the other for their immediate supervisors/managers. Since it is impractical to include every subject in the study, a straightforward way was utilized to find out the result pedestal on several criteria, involving the readiness also accessibility/availability of respondents (Dörnyei, 2007). A self-administered and structured questionnaire is the primary data collecting instrument. The questionnaire for supervisors contained 11 items, whereas the survey instrument for employees had 14 items. A matching program method was used to compare employees' reactions to their employer. Workers and supervisors submitted a total of 190 replies. The research was left with 150 legitimate replies after eliminating the responses that didn't match or were missing data. Employees supplied 190 replies while supervisors offered 90 responses.

Instrumentation

Green Transformation leadership

A five-point scale, range starting never to always, was utilized. We use Chen and Chang [13] to evaluate Green Transformation Leaderships, which consist of 6 elements: "(1) the leader of the green innovation project inspires the project members with environmental plans; (2) the leader

of the green innovation project provides a clear environmental vision for the project members to follow; (3) the leader of the green innovation project gets the project members to follow the environmental vision; (4) the leader of the green innovation project gets the project members to follow the environmental vision; (5) the leader of the green innovation project gets the project members to follow the environmental vision". The alpha value of Cronbach's alpha is(.806).

Eco-Innovation

To assess EI, respondents were asked how frequently they will develop or implement plans that benefit the environment. The responses were based on a five-point Likert scale that ranges starting never to always. 'Efficient water usage,' 'Natural light and heat use,' 'Incursion in green markets and customers,' 'create new green commercial linkages,' and so on are some of the topics that will be investigated. The alpha value of Cronbach's alpha is.824

Employee green workplace behavior

In this study a 5-point scale, with 1 being "never" and 5 being "always." We'll use the items to assess employees Voluntary Green workplace Behavior, which includes 1. "...act in environmentally friendly ways," 2. "...carry out environmentally friendly behaviors at work," and 3: "...perform pro-environmental behaviors while you worked." Cronbach's alpha was

Findings and Analysis

These findings and interpretations are presented in this part of the study's findings. The frequency distribution of the demographic data is shown in this graph. Mean, default, and standard error are among the descriptive characteristics listed above (standard error is the standard deviation of the mean). This section also includes the inferential features of the research variables, in addition to their descriptive attributes. In the next step, we offer a regression analysis.

Frequency Distribution

In the tables below, we illustrate the frequency distribution of the study's demographic variables. the gender of the respondents is presented. Out of 150 responders, 107 (71.3 percent) were male and 43 (28.1 percent) were female, according to the results.

The age-related statistics are shown in table no.3. 70 percent of the responders were between the ages of 18 and 30. In the chosen banks, youthful employees constituted the majority of participants. Almost all of the staff were graduates. Among the 150 responders, 106 were university graduates (70.7 percent). The majority of the personnel were university graduates. There have been 95 university graduates (70 percent) among some of the 150 responders, followed by 106 employees with less than a bachelor's degree (19.3 percent). And 10% had a postgraduate degree. Most of the employees' have 3-6 years of experience (42.7%). And 30.7 % of employees have less than 3 years of experience, 4% employees have experience of more than 10 years. Most of the respondents were from private banks among 150 respondents 125(83.3%) were private banks employees and the remaining 25 (16.7%) were public banks employees.

Pearson Correlation

The variables were tested for multicollinearity. Positive and substantial correlations exist between all variables. Essentially, this means that a change in one variable will have a positive effect on the other. such as the Green Transformation Leadership will lead to eco-innovation and this will also enhance the voluntary green workplace behavior. The result shows that Green Transformation Leadershipshp, EI, and EVGWB are positively and significantly correlated. There was no issues of multicollinearity was found.

HI: Regression analysis was used to test the first hypothesis. The value of R square (0.388) was found significant which shows the model fitness. The un-standardized Beta value was found .767 with a t value of 9.685shows a significant positive effect of Green Transformation Leadership on employees' EI. Thus this proved that if leaders adopt the green transformative behavior then this will lead to employee eco-innovation.

Hypothesis 1

Model Summary Hypothesis 1

Model		R		R Square	F	P
1		.623[a]		.388	93.802	P<0.01
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	10.751	1.467		7.326	.000
1	Green Transformaiton Leadershipshp	.767	.079	.623	9.685	.000

a. Dependent Variable: EI

H2: In addition, regression analysis confirmed the study's second hypothesis. There was a substantial difference in R square (0.564). We were able to determine the value of an unstandardized beta = .797 with a t value of 8.35, indicating that is statistically significant. According to the findings of this hypothesis, Green Transformation Leaderships has a favorable and substantial impact on EVGWB. This hypothesis proved that a leader can play an important role in the green behavior of the employee. If a leader transforms his green behavior this will increase the green behavior of employees.

Hypothesis 2

Model		R	R Square	F	Sig.	
1		.564[a]	.318	69.141	.000[b]	
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	20.073	1.777		11.297	.000
1	Green Transformaiton Leadershipshp	.797	.096	.564	8.315	.000

a. Dependent Variable: EVWGB

H3: Empiric verification of EVGWB's role as a mediator between GREEN TRANSFORMATION LEADERSHIP and ECO INNOVATION R square value (.708) with F=73.755 significant is shown in the result. Because EVGWB (.355) and Green Transformation Leaderships (.484) were both statistically significant, EVGWB mediates the CSRP-IWB connection to some extent.

Hypothesis 3

Model		R		R Square	F	Sig.
1		.708[a]		.501	73.755	.000[b]
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	3.630	1.815		2.000	.047
1	EVWGB	.355	.062	.407	5.767	.000
	GTL	.484	.087	.393	5.570	.000

a. Dependent Variable: EI

Direct and indirect effects were calculated. The direct effect of the independent variable is as follows

Table 1.

Direct Effect

Effect	SE	T	P	LLCI	ULCI
0.4841	0.0869	5.57	p<0.01	0.3123	0.6559

And the indirect effects are as follows:

Table 1.

Indirect effects

	Effect	SE	BootLLCI	BootULCI
EVWGB	0.2828	0.0644	0.1719	0.4287

The mediating effects are significant and positive as β= 0.2828, LLCI=0.1719, and ULCI=0.4287.

Conclusion & Discussion

Business leaders were required to continually modify and build their cyclesto remain competitiv e in the face of intense competition and fast change.Organizational sustainability may beimproved by having leaders who adopt eco-friendly behaviors'. Green Transformation Leadership and eco-innovation were the subjects of the current study. It was also confirmed that employee voluntary green workplace behavior played a role in mediating change. Employees of public and commercial banks in the Hazara area of Pakistan provided the data. The proposed hypotheses were validated by empirical evidence.

H1: The first hypothesis of the study was to investigate the impact of Green Transformation Leadership on EI in the banking sector of the Hazara Region. Empirical data confirm the positive impact of Green Transformation Leadership on EI. Green Transformation Leadership inspires individuals through seeking intellectual thinking and inspirational motivation towards green values. The finding of this hypothesis is consistent with previous research findings (see e.g, Bahzar, 2019; Chen & Chang, 2013; Çop et al., 2021; Mittal & Dhar, 2016; Sanjay Kumar Singh et al., 2020; Xingdong Wang et al., 2018).

Besides, previous empirical findings, the theory of componential creativity also provides support to our result, which states that individual creativity is conditioned to the social work environment (SWE). SWE includes leadership that plays an important role in inspiring green values such as eco-innovation.

H2 proposes a significant positive impact of Green Transformation Leadership on EVGWB. Empirical data confirmed the proposed hypothesis. Findings revealed that the green behavior of the leader that he/she transforms into employees enhances their volunteerisms towards green behavior. In addition, as Green Transformation Leadership focuses on the creation of environmentally-friendly activities that are not only beneficial to shareholders, but also the environment, employees feel that their business has a social duty. As a consequence of this investigation, the second hypothesis is well-supported. It was predicted that Green Transformation Leaderships would have a beneficial impact on employee green behaviors. In line with past study findings (Gumusluoglu & Ilsev, 2009; Jia et al., 2018; Kim et al., 2017; Kura, 2016; Ramus & Steger, 2000; Xingdong Wang et al., 2018; Zhang et al., 2021; Shunyi Zhou et al., 2018). in addition to prior empirical results,

B&B supports our hypothesis that a supportive leader enhances employee innovation capability. If a leader provides a supportive environment to his employees this gives them the confidence to adopt green behavior voluntarily.

To support the B&B idea, it was determined that Green Transformation Leadership has a positive connection with EVGWB, therefore H2 was supported.

H3, EVGWB was postulated as a major and positive mediating factor in the Green Transformation Leadership–EI relationship, according to the research. The data collected validates the fourth hypothesis of the study. A significant relationship between EVGWB and EI and Green Transformation Leadership was suggested. According to this concept, past study findings have been confirmed (Bilal et al., 2021; Jia et al., 2018; Kura, 2016; Xiao et al., 2017; Zhang et al., 2021; Shunyi Zhou et al., 2018).

Aside from that, prior empirical results our hypothesis was supported by the Social Learning Theory that individuals learn by the act of others, workers' required green behaviors' is highly dependent on Green Transformation Leadership inside businesses. As a result, our hypothesis is supported by the social learning theory. this theory suggests that individuals learn by the behavior of others like leaders and their colleagues/coworkers as well.

The goal of this study was to see how Green Transformation Leaderships had an impact on staff eco-innovation. For this study in the banking industry, data was collected from banks in KPK Pakistan that participate in eco-innovative projects. Because it will be impossible to monitor every subject in this study, convenience sampling will be utilized to collect data based on several criteria, including respondents' accessibility. Two appraisal tools were created and utilized for this study: one for workers and the other for their immediate supervisors. This study has important strategic implications for bankers wanting to enhance their employees' creative work ethics.

Theoretical Contribution

This work provides many theoretical advances based on its findings. Eco-innovation increases when employees adopt voluntary green workplace behaviors. Green Transformation Leaderships has a key indirect role in encouraging eco-innovation, according to the study's findings, which were confirmed by a second study. Thirdly, employee voluntary green workplace behavior has a mediating role between Green Transformation Leaderships and eco-innovation in banks. Finally, this research contributes to the body of knowledge on eco-innovation by examining its implementation in banks. As a result, employee voluntary green workplace behavior is a critical variable in the connection between green transformational leadership and eco-innovation. According to this study, a set of creative activities such as green transformational leadership and eco-innovation might help service industries like banks contribute significantly to environmental stewardship. Additionally, businesses must embrace effective leadership styles and develop higher levels of eco-innovative activities.

Managerial implications

This research makes important recommendations for bank management. Using green transformational leadership to develop a green organizational identity would need a significant investment of resources to improve their green inventiveness. If the company wants to inspire staff eco-innovation, it'll need to link the notion of green transformational leadership with its long-term environmental goals. By embracing green transformational leadership and green employee voluntary green workplace behavior, bank management may play a significant role in establishing environmentally friendly service behavior. Bank executives should undertake training programs to better understand environmentally friendly activities so that they can promote green transformational leadership and eco-innovation among their workers and encourage them to engage in green voluntary workplace behavior. Organizational managers may

be encouraged to teach themselves and their workers to acquire skills that aid in eco-innovation for the business, so that employees do not waste time, energy, or resources while executing such operations.

Finally, the study's findings imply that Pakistani banks, particularly Hazara kpk institutions, must understand their environmental responsibilities to safeguard the environment and achieve high levels of eco-innovation. The findings of this study provide banks the chance to conduct environmentally friendly operations, but it also poses a challenge to those institutions. The opportunity is to recognize the importance of creating green transformational leadership and the role it can play in improving the organization's eco-innovation. The task for these banks would be to discover and develop green transformational leadership to achieve high levels of eco-innovation.

Limitations and directions for future work

Certain limitations need to be considered when performing this research. To begin with, because this study is centered on banks operating in the Hazara area of KPK Pakistan, more research in other regions, as well as industries such as tourism, IT, and airlines, is required in the future to generalize and validate the conclusions of this study. Second, while analyzing the link between green transformational leadership and eco-innovation, cultural variables were not taken into account. Future research can take the cultural element into account when evaluating the link between the factors studied. Finally, the research is cross-sectional and based on a survey. We were unable to identify the casualty between the correlations identified in this investigation because of a lack of time. As a result, it is recommended that additional longitudinal studies be conducted to have a better understanding of the intricacies involved in reaching greater levels of environmental performance. Future research might incorporate elements not included in this study, such as bank rating, environmental organizational culture, and green dynamic capabilities, to achieve successful environmental performance.

References

- Ahangar, R. G. (2009). Building managers as transformational leaders in public sector banks. International Review of Business Research Study, 5(5), 355-364.
- Amabile, T. M. (1997). Motivating Creativity in Organizations: On Doing What You Love and Loving What You Do. California Management Review, 40(1), 39–58. https://doi.org/10.2307/41165921.
- Andriopoulos, C., & Lewis, M. W. (2010). Managing Innovation Paradoxes: Ambidexterity Lessons from Leading Product Design Companies. *Long Range Planning*, *43*(1), 104–122. https://doi.org/10.1016/j.lrp.2009.08.003.
- Arendt, L. A. (2009b). Transformational leadership and follower creativity: The moderating effect of leader humor. Rev. Bus. Res.
- Arranz, N., Arroyabe, M., Li, J., & Fernandez de Arroyabe, J. C. (2020). Innovation as a driver of eco-innovation in the firm: An approach from the dynamic capabilities theory. *Business Strategy and the Environment*, *29*(3), 1494–1503. https://doi.org/10.1002/bse.2448.
- Atmojo, M. (2012). The Influence of Transformational Leadership on Job Satisfaction, Organizational Commitment, and Employee Performance. *International Research Journal of Business Studies*, *5*(2), 113–128. https://doi.org/10.21632/irjbs.5.2.113-128.

- Avery, G., & Bergsteiner, H. (2012). *Sustainable leadership: Honeybee and locust approaches*. Routledge.
- Avolio, B. J., Waldman, D. A., & Einstein, W. O. (1988). Transformational Leadership in a Management Game Simulation. *Group & Organization Studies*, *13*(1), 59–80. https://doi.org/10.1177/105960118801300109.
- Babenko, V. (2020). Enterprise innovation management in industry 4.0: Modeling aspects. Emerging extended reality technologies for industry 4.0: Early experiences with conception, design, implementation, evaluation and deployment, 141.
- Bahzar, M. (2019). Effects of Green Transformational and Ethical Leadership on Green Creativity, Eco-Innovation and Energy Efficiency in Higher Education Sector of Indonesia. *International Journal of Energy Economics and Policy*, *9*(6), 408–414. https://doi.org/10.32479/ijeep.8372.
- Banks, G. C., McCauley, K. D., Gardner, W. L., & Guler, C. E. (2016). A meta-analytic review of authentic and transformational leadership: A test for redundancy. *The Leadership Quarterly*, *27*(4), 634–652. https://doi.org/10.1016/j.leaqua.2016.02.006.
- Bono, J. E., & Judge, T. A. (2003). Self-Concordance at Work: Toward Understanding the Motivational Effects of Transformational Leaders. *Academy of Management Journal*, *46*(5), 554–571. https://doi.org/10.5465/30040649.
- Buhl, A., Blazejewski, S., & Dittmer, F. (2016). The More, the Merrier: Why and How Employee-Driven Eco-Innovation Enhances Environmental and Competitive Advantage. *Sustainability*, *8*(9), 946. https://doi.org/10.3390/su8090946.
- Cai, W., Yang, C., Bossink, B. A. G., & Fu, J. (2020). Linking Leaders' Voluntary Workplace Green Behavior and Team Green Innovation: The Mediation Role of Team Green Efficacy. *Sustainability*, *12*(8), 3404. https://doi.org/10.3390/su12083404.
- Carrillo-Hermosilla, J., del Río, P., & Könnölä, T. (2010). Diversity of eco-innovations: Reflections from selected case studies. *Journal of Cleaner Production*, *18*(10-11), 1073–1083. https://doi.org/10.1016/j.jclepro.2010.02.014.
- Chang, C., & Chen, Y. (2013). Green organizational identity and green innovation. *Management Decision*, *51*(5), 1056–1070. https://doi.org/10.1108/md-09-2011-0314.
- Chen, A. S.-Y., & Hou, Y.-H. (2016). The effects of ethical leadership, voice behavior and climates for innovation on creativity: A moderated mediation examination. *The Leadership Quarterly*, *27*(1), 1–13. https://doi.org/10.1016/j.leaqua.2015.10.007.
- Chen, Y.-S. (2007). The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms. *Journal of Business Ethics*, 77(3), 271–286. https://doi.org/10.1007/s10551-006-9349-1.
- Chen, Y.-S., & Chang, C.-H. (2012). The Determinants of Green Product Development Performance: Green Dynamic Capabilities, Green Transformational Leadership, and Green Creativity. *Journal of Business Ethics*, *116*(1), 107–119. https://doi.org/10.1007/s10551-012-1452-x.

- Chen, Y.-S., Chang, C.-H., & Lin, Y.-H. (2014). Green Transformational Leadership and Green Performance: The Mediation Effects of Green Mindfulness and Green Self-Efficacy. *Sustainability*, *6*(10), 6604–6621. https://doi.org/10.3390/su6106604.

- Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The Influence of Green Innovation Performance on Corporate Advantage in Taiwan. *Journal of Business Ethics*, *67*(4), 331–339. https://doi.org/10.1007/s10551-006-9025-5.

- Choi, S. B., Kim, K., Ullah, S. M. E., & Kang, S.-W. (2016). How transformational leadership facilitates innovative behavior of Korean workers. *Personnel Review*, *45*(3), 459–479. https://doi.org/10.1108/pr-03-2014-0058.

- De Roeck, K., & Farooq, O. (2017). Corporate Social Responsibility and Ethical Leadership: Investigating Their Interactive Effect on Employees' Socially Responsible Behaviors. *Journal of Business Ethics*, *151*(4), 923–939. https://doi.org/10.1007/s10551-017-3656-6.

- del Río, P., Peñasco, C., & Romero-Jordán, D. (2016). What drives eco-innovators? A critical review of the empirical literature based on econometric methods. *Journal of Cleaner Production*, *112*, 2158–2170. https://doi.org/10.1016/j.jclepro.2015.09.009.

- Dranev, Y., Izosimova, A., & Meissner, D. (2018). *Organizational Ambidexterity, Performance and Knowledge Management: Empirical Evidence from the Energy and Pharmaceutical Sectors*. Higher School of Economics Research Study No. WP BRP, 83.

- Elçi, M., Şener, İ., Aksoy, S., & Alpkan, L. (2012). The Impact of Ethical Leadership and Leadership Effectiveness on Employees' Turnover Intention: The Mediating Role of Work Related Stress. *Procedia - Social and Behavioral Sciences*, *58*, 289–297. https://doi.org/10.1016/j.sbspro.2012.09.1003.

- Elkins, T., & Keller, R. T. (2003). Leadership in research and development organizations: A literature review and conceptual framework. *The Leadership Quarterly*, *14*(4-5), 587–606. https://doi.org/10.1016/s1048-9843(03)00053-5.

- Evans, M. G. (1996). RJ House's "A path-goal theory of leader effectiveness". *The Leadership Quarterly*, *7*(3), 305-309.

- Felin, T., Foss, N. J., & Ployhart, R. E. (2015). The micro foundations movement in strategy and organization theory. *The Academy of Management Annals*, *9*(1), 575-632.

- Jenkin, T. A., McShane, L., & Webster, J. (2011). Green Information Technologies and Systems: Employees' Perceptions of Organizational Practices. *Business & Society*, *50*(2), 266–314. https://doi.org/10.1177/0007650311398640.

- Jia, J., Liu, H., Chin, T., & Hu, D. (2018). The Continuous Mediating Effects of GHRM on Employees' Green Passion via Transformational Leadership and Green Creativity. *Sustainability*, *10*(9), 3237. https://doi.org/10.3390/su10093237.

- Judge, T. A., & Piccolo, R. F. (2004). Transformational and Transactional Leadership: A Meta-Analytic Test of Their Relative Validity. *Journal of Applied Psychology*, *89*(5), 755–768. https://doi.org/10.1037/0021-9010.89.5.755.

- Keller, R. T. (1992). Transformational Leadership and the Performance of Research and Development Project Groups. *Journal of Management*, *18*(3), 489–501. https://doi.org/10.1177/014920639201800304.

- Kim, A., Kim, Y., & Han, K. (2018). A Cross Level Investigation on the Linkage Between Job Satisfaction and Voluntary Workplace Green Behavior. *Journal of Business Ethics*, *159*(4), 1199–1214. https://doi.org/10.1007/s10551-018-3776-7.

- Kim, A., Kim, Y., Han, K., Jackson, S. E., & Ployhart, R. E. (2014). Multilevel Influences on Voluntary Workplace Green Behavior: Individual Differences, Leader Behavior, and Coworker Advocacy. *Journal of Management*, *43*(5), 1335–1358. https://doi.org/10.1177/0149206314547386.

- Kim, W., & Park, J. (2017). Examining Structural Relationships between Work Engagement, Organizational Procedural Justice, Knowledge Sharing, and Innovative Work Behavior for Sustainable Organizations. *Sustainability*, *9*(2), 205. https://doi.org/10.3390/su9020205.

- Kneipp, J. M., Gomes, C. M., Bichueti, R. S., Frizzo, K., & Perlin, A. P. (2019). Sustainable innovation practices and their relationship with the performance of industrial companies. *Revista de Gestão*, *26*(2), 94–111. https://doi.org/10.1108/rege-01-2018-0005.

- KUPALOVA, H., GONCHARENKO, N., & ANDRUSIV, U. (2021). Environmental Management of Agricultural Enterprises in the Context of European Environmentally - Friendly Food System. *Journal of Environmental Management and Tourism*, *12*(3), 718. https://doi.org/10.14505//jemt.12.3(51).11.

- Kura, K. M. (2016). Linking Environmentally Specific Transformational Leadership and Environmental Concern to Green Behaviour at Work. *Global Business Review*, *17*(3_suppl), 1S14S. https://doi.org/10.1177/0972150916631069.

- Lamm, E., Tosti-Kharas, J., & King, C. E. (2014). Empowering Employee Sustainability: Perceived Organizational Support Toward the Environment. *Journal of Business Ethics*, *128*(1), 207–220. https://doi.org/10.1007/s10551-014-2093-z.

- Mittal, S., & Dhar, R. L. (2015). Transformational leadership and employee creativity. *Management Decision*, *53*(5), 894–910. https://doi.org/10.1108/md-07-2014-0464.

- Mittal, S., & Dhar, R. L. (2016). Effect of green transformational leadership on green creativity: A study of tourist hotels. *Tourism Management*, *57*, 118–127. https://doi.org/10.1016/j.tourman.2016.05.007.

- Mumford, M. D. (2000). Managing Creative People: Strategies and Tactics for Innovation. *Human Resource Management Review*, *10*(3), 313–351. https://doi.org/10.1016/s1053-4822(99)00043-1.

- Muster, V., & Schrader, U. (2011). Green Work-Life Balance: A New Perspective for Green HRM. *German Journal of Human Resource Management: Zeitschrift Für Personalforschung*, *25*(2), 140–156. https://doi.org/10.1177/239700221102500205.

- Northouse, P. G. (2013). *Leadership: Theory and Practice*; SAGE: Thousand Oaks, CA, USA,

- OECD, P. B. (2009). *Sustainable manufacturing and eco-innovation: towards a green economy*. Policy Brief-OECD Observer.

- Ones, D. & Dilchert, S. (2012a). Employee green behaviors, in Managing Human Resources for Environmental Sustainability, eds Jackson SE, Ones DS, Dilchert S., editors.(San Francisco, CA.

- Ones, D. S., & Dilchert, S. (2013). Measuring, understanding, and influencing employee green behaviors. Green organizations: Driving change with IO psychology, 115-148.
- Park, J., & Kim, H. J. (2014). Environmental proactivity of hotel operations: Antecedents and the moderating effect of ownership type. *International Journal of Hospitality Management*, *37*, 1–10. https://doi.org/10.1016/j.ijhm.2013.09.011.
- Petts, J. (1998). Environmental Responsiveness, Individuals and Organizational Learning: SME Experience. *Journal of Environmental Planning and Management*, *41*(6), 711–730. https://doi.org/10.1080/09640569811380.
- Porter, M., & Van der Linde, C. (1995). Green and competitive: ending the stalemate. The Dynamics of the eco-efficient economy: environmental regulation and competitive advantage. *Long Range Planning, 28*(6), 128–129. https://doi.org/10.1016/0024-6301(95)99997-e.
- Rayevnyeva, O., & Touzani, T. (2021). Models Of Forecasting Of Enterprise's Behavior In Non-Stationary External Environment. *Studies of Applied Economics*, *38*(4). https://doi.org/10.25115/eea.v38i4.3998.
- Rennings, K. (2000). Redefining innovation — eco-innovation research and the contribution from ecological economics. *Ecological Economics*, *32*(2), 319–332. https://doi.org/10.1016/s0921-8009(99)00112-3.
- Rupp, D. E., & Mallory, D. B. (2015). Corporate Social Responsibility: Psychological, Person-Centric, and Progressing. *Annual Review of Organizational Psychology and Organizational Behavior*, *2*(1), 211–236. https://doi.org/10.1146/annurev-orgpsych-032414-111505.
- Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The Effects of Personal and Contextual Characteristics on Creativity: Where Should We Go from Here? *Journal of Management*, *30*(6), 933–958. https://doi.org/10.1016/j.jm.2004.06.007.
- Shamir, B., House, R. J., & Arthur, M. B. (1993). The Motivational Effects of Charismatic Leadership: A Self-Concept Based Theory. *Organization Science*, *4*(4), 577–594. https://doi.org/10.1287/orsc.4.4.577.
- Shin, S. J., & Zhou, J. (2003). Transformational Leadership, Conservation, and Creativity: Evidence From Korea. *Academy of Management Journal*, *46*(6), 703–714. https://doi.org/10.5465/30040662.
- Singh, S. K., Del Giudice, M., Chierici, R., & Graziano, D. (2020). Green innovation and environmental performance: The role of green transformational leadership and green human resource management. Technological Forecasting and Social Change, 150, 119762.
- Song, W., & Yu, H. (2017). Green Innovation Strategy and Green Innovation: The Roles of Green Creativity and Green Organizational Identity. *Corporate Social Responsibility and Environmental Management*, *25*(2), 135–150. https://doi.org/10.1002/csr.1445.
- Sosik, J. J., Kahai, S. S., & Avolio, B. J. (1998). Transformational Leadership and Dimensions of Creativity: Motivating Idea Generation in Computer-Mediated Groups. *Creativity Research Journal*, *11*(2), 111–121.
- Tamayo-Orbegozo, U., Vicente-Molina, M.-A., & Villarreal-Larrinaga, O. (2017). Eco-innovation strategic model. A multiple-case study from a highly eco-innovative European

region. *Journal of Cleaner Production*, *142*, 1347–1367. https://doi.org/10.1016/j.jclepro.2016.11.174.

- Tan, C. L., & Nasurdin, A. M. (2011). Human resource management practices and organizational innovation: assessing the mediating role of knowledge management effectiveness. *Electronic journal of knowledge management*, *9*(2), 155.

- Taştan, S. B., & Davoudi, S. M. M. (2017). The relationship between organisational climate and organisational innovativeness: testing the moderating effect of individual values of power and achievement. *International Journal of Business Innovation and Research*, *12*(4), 465. https://doi.org/10.1504/ijbir.2017.10003335.

- Taylor, M., Tam, C., & Gielen, D. (2006). Energy efficiency and CO2 emissions from the global cement industry. *Korea*, *50*(2.2), 61.67.

- Waldman, D. A., & Bass, B. M. (1991). Transformational leadership at different phases of the innovation process. *The Journal of High Technology Management Research*, *2*(2), 169–180. https://doi.org/10.1016/1047-8310(91)90002-6.

- Wang, C.-J., Tsai, H.-T., & Tsai, M.-T. (2014). Linking transformational leadership and employee creativity in the hospitality industry: The influences of creative role identity, creative self-efficacy, and job complexity. *Tourism Management*, *40*, 79–89. https://doi.org/10.1016/j.tourman.2013.05.008.

- Wang, X., Zhou, K., & Liu, W. (2018). Value Congruence: A Study of Green Transformational Leadership and Employee Green Behavior. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.01946.

- Zhang, A. Y., Tsui, A. S., & Wang, D. X. (2011). Leadership behaviors and group creativity in Chinese organizations: The role of group processes. *The Leadership Quarterly*, *22*(5), 851–862. https://doi.org/10.1016/j.leaqua.2011.07.007.

- Zhang, J., Chen, Y., & Liu, J. (2016). Ethical Leadership and OCBE: The Influence of Prosocial Motivation and Self Accountability. *Academy of Management Proceedings*, *2016*(1), 15588. https://doi.org/10.5465/ambpp.2016.15588abstract.

- Zhang, J., Ul-Durar, S., Akhtar, M. N., Zhang, Y., & Lu, L. (2021). How does responsible leadership affect employees' voluntary workplace green behaviors? A multilevel dual process model of voluntary workplace green behaviors. Journal of Environmental Management, 296, 113205.

- Zhao, H., & Zhou, Q. (2019). Exploring the Impact of Responsible Leadership on Organizational Citizenship Behavior for the Environment: A Leadership Identity Perspective. *Sustainability*, *11*(4), 944. https://doi.org/10.3390/su11040944.

- Zheng, J., Wu, G., Xie, H., & Li, H. (2019). Leadership, organizational culture, and innovative behavior in construction projects. *International Journal of Managing Projects in Business*, *12*(4), 888–918. https://doi.org/10.1108/ijmpb-04-2018-0068.