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Research Article

Investigating the Impact of Green R&D, Transformational Leadership and Cross-Cultural Approaches on Performance Management in the Manufacturing Sector

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A B S T R A C T

In the present era, environmental sustainability is a transformative concept that is rapidly penetrating all facets of our lives and professional environments. Belgium focuses on environmental sustainability offers a wide range of green initiatives to sustain its environmental performance. However, the previous research has failed to determine the extent to which Green R & D Investment, Green Transformational Leadership, Green Cross Culture perspective impact the Belgium manufacturing organizations. The main rationale for performing this research was to determine the above green initiative's impact on the Belgium manufacturing organization. For this, a mixed-method approach has been utilized. Data from 254 respondents have been collected. This data was further analyzed through the analyzed the SPSS to perform the quantitative analysis. The results of the quantitative analysis show the Green R & D Investment. Green Transformational Leadership significantly influence green performance management (GPM) since its significance value is less than 0.5. At the same time, the Green Cross Culture Perspective does not pose any impact on GPM since it has a p-value of 0.48. On the other hand, qualitative data was gathered through the focus group interviews. Nine managers have been included in to focus group interview. In the focus group interview, managers depict the all the considered initiatives are vital for their green sustainability. However, green cross-cultural perceptive strategies should be enhanced more and consider both collectivism and individualism elements for green sustainability. In spite of positive research results, this research also implies that the manufacturing organization in Belgium need to continuously change R&D investment strategies, focus on leader tanning and increase employee engagement to ensure the successful implementation of green performance management.

Keywords: Performance management, Transformational leader, R&D investment, Cross culture

1. Introduction

Sustainability is an emerging domain of interdisciplinary inquiry, particularly concerning the economic impacts of environmental challenges on diverse sectors and business organizations. Many organizations in this competitive world have not incorporated the phenomena of "Green Innovation into their managerial practices to gain sustainability for the long term[1]. Many organizations have already implemented green innovation into their work practice. This research particularly sheds lighting explaining the role of certain practices in enhancing the Belgium Green Performance Management (GPM). Green Innovation in the 21st century is critical due to intensive competition between the firms. Green Innovation may facilitate the integration of today's organizational activities with ecological considerations. Integrating Green Innovation improves organizational development, reputation and performance[2,3]. In addition, integrating green innovation into the

management of an organization motivates employees to work towards creating a more environmentally friendly world[4].

Mousa Othman mentioned in their research that the manufacturing sector is a crucial contributor to enhancing economic growth and environmental impact[5]. However, it has also gone through a lot of challenges and opportunities that enforce them in lining up its operation to green practices or principles[5]. Previous research papers have outlined how adding GPM phenomena into organizational practices helps in gaining competitive advantages. This is due to the reason that GPM has prioritized sustainable strategies that enable the manufacturing sector to enhance its environmental protection goals[6-8].

Shahzad et al. supported the opinion of Mousa and Othman in their research[9]. They mentioned that over the last 20 years, manufacturing organizations have faced much pressure from stakeholders focusing on environmental sustainability. These people want to know how their work affects the environment[9]. Likewise, Wang and his colleague think that stakeholders' encouragement to their organization to practice green management motivates them to employ green practices in different departments and produce green products and services[10]. The organization needs to trust the intangible assets as well to bring sustainability. This is due to facing the complicated challenges of keeping nature safe requires it. Furthermore, the organization also needs to learn how much pressure different people put on it[10]. As per the previous research, employees across different organizational levels pose different kinds of influence on environmental performance but the top management has a more critical role in impacting the environmental performance of the organization[11].

Khan et al. define GPM as the collective addition of internal competencies and skills to an organization in order to ensure its sustained success. SME manufacturers encounter challenges when attempting to completely integrate "green innovation" into their operational processes, despite having already implemented such methods. This is because the organization's capabilities are not commensurate with the motivation and expertise of its current workforce. Many manufacturing facilities, particularly in Belgium, need to be made aware of the critical nature of GPM in terms of maintaining a competitive edge[12]. These manufacturing facilities are now being requested to incorporate "green innovation" into their goods and services. It facilitates their efforts to adopt more eco-conscious practices. Green Innovation incorporation in GPM is vital in their era due to extensive competition among different organizations in terms of not only supporting ecological sustainability but also achieving competitiveness in terms of reputation and performance[13].

There is a gap that exists in previous research as they fail to show to which extent Green Research & Development (R&D) Investment, Green Transformational Leadership (GTFL) and cross-cultural practices can impact enhancing the Belgium manufacturing GPM. Therefore, the main rationale for performing this research is to show the critical role of this above practice in activating the GPM. By finding the roles of these elements, the research not only enriches the current academic knowledge but also helps the manufacturing stakeholders to implement these elements into their performance management practices to achieve the GPM and automatically the reputation in this competitive market.

1.1. Research objectives

The main objectives of this research are as follows:

- To investigate the role of R&D investment in GPM of the Manufacturing Sector
- To investigate the role of GTFL on GPM of the Manufacturing Sector
- To investigate the role of Green Cross-Cultural Practices on GPM of the Manufacturing Sector

2. Literature Review

2.1. Green performance management

Current manufacturing organizations have to deal with an accelerated pace of change. The lengths of product and technology life cycles are decreasing, requiring efforts to quickly alter the design of their products. Additionally, intense rivalry necessitates rapid adaptations to ensure product and service distinctiveness in response to client demand. Increasingly organizations are recognizing that they cannot effectively compete in isolation but rather must operate as interconnected networks[14]. Thus, there is a persistent need for interconnected networks and swift adaptations as it can ensure sustainability. El-Kassar Singh mentioned that One approach to accomplish this is by integrating "green innovation" into the performance management system of the organization. Through the incorporation of environmentally sustainable practices and long-term competitiveness in the global market, GPM can ensure the integration of sustainability[15].

A significant number of managers are doubtful to be uninformed regarding the most recent advancements in performance management systems. The majority obtain marketing materials from consultants who boast the definitive guide to corporate success or have made assurances that their organization will achieve global prominence. This reliance is due to the deficiency in internal resources required to make the firm decision to make the educated decision[16]. GPM, as already mentioned above, entails incorporating internal capabilities and competencies that ensure the organization's longevity. According to Rehman Khan & Yu, GPM has become a recognized organizational philosophy that advocates for the enhancement of ecological efficiency and the reduction of environmental risks and impacts to facilitate the attainment of market share and financial success for organizations and their partners[17].

This research is focused on examining the role of Green R&D investment, GTL and green cross-cultural practices in enhancing the role of GPM organization in Belgium manufacturing organization. At the moment, green performance management is held in high regard by businesses, which motivates them to incorporate them into their strategies and objectives. According to Suharti & Sugiarto, at this time, the implementation of GPM includes the incorporation of resource efficiency, the development of a favorable corporate image and improved economic and eco-performance[18]. In their 2019 research, Afum and his colleague mentioned that implementing GPM gives organizations financial, social and environmental benefits. This is true for manufacturing firms. Furthermore, their studies show that taking part in green processes would make the organization do better over a long time and help it be stronger than others. This might also give them a special identity[19].

2.2. Green R & D Investment

In the past few years, there has been a big focus on linking environment-friendly R&D spending to how well leaders do. They consider it helps them to keep going and grow over a long time. Doing R&D activities can make natural resources better and less likely to have harmful parts[20]. This research looks at Green R&D spending. It supports Li et al. assertion that organizations that spend money on R&D make products or processes better for the environment, protect nature and reduce harm done to life systems[21].

Investing in R& D is very important to make investment and research better. This is because spending money on R&D can affect different types of businesses and stages differently. For example organizations and banks might use detailed economic models to decide the best way to spend money on green technology research. Green manufacturing technology Investments in R&D can increase total factor productivity through the creation of novel tools[22]. However, Song et al. have posited that the level of R&D devoted to green technologies has a substantial adverse effect on a company's profitability. Inherent risks and uncertainties accompany green technology R&D expenditures. One potential consequence is overinvestment, which could result in inadequate returns to offset the initial investment in green technology R&D[4]. Therefore, managers who allocate greater resources toward green technology research and development may be more risk-averse. As a whole, Investments in R&D for green technologies may be regarded as an undisclosed expense that entails substantial hazards and has the potential to undermine the performance of an organization[23,4].

It has been established that green technology R&D spending is positively correlated with Belgium's green performance management. Its implementation ensures ecological effectiveness, environmental friendliness and constant innovation[24]. Green tech R&D initiatives contribute to the growth and improved efficiency of enterprises by embracing the concept of technological innovation. Additionally, it generates supplementary income[25]. In simple terms, business organizations use their investment in research and development (R&D) for green technology to create and introduce new goods and equipment. This helps them improve their business survival and increases their competitive market. Therefore, this research proposes the following hypothesis for this variable:

H1: Green R & D Investment significantly impacts the Belgium Manufacturing Industry GPM

HO1: Green R & D Investment does not significantly impact the Belgium Manufacturing Industry GPM

2.3. Green transformational leadership

Effective leaders make an organization run better. The current research gives a complete picture of green transformational leadership (GTFL) as a leading mainly directed at giving employees clear goals, inspiration and support. At the same time, it helps them grow, allowing them to help reach the company's goals for protecting the environment[26]. Previous studies show that GTFL helps employees learn new things and skills. Getting employees involved in activities related to green practices helps the organization improve its actions on nature. So, it might ensure to give eco-friendly products and services[26-28].

The Resource Based View (RBV) says that leadership is an important resource for managing the whole environment of your company. Malik et al. hypothesized RBV as an accumulation of tangible, intangible and human resources. These valued and unique resources serve as the key foundation for continuing a competitive edge and succeeding in sustained high levels of performance[29]. In the same way, Song and Yu in their research, mentioned that transformational leadership encompasses various elements, such as fostering an innovative environment, inspiring and motivating employees to develop trust in the leader's vision and encouraging them to identify with it. These actions subsequently impact the organization's performance and innovation, thus helping to gain a competitive advantage[30]. Thus, we can assert that RBV theory contributes greatly to explaining the role of GTFL in enhancing and improving Belgium's overall manufacturing performance. GTFL is related to RBV in the sense that both objectives concern the execution of sustainable practices and the performance of the organization.

GTFL is significant and pertinent to firm performance, according to prior research, because her/his adherents are more prolific at the individual, team and firm levels due to their excellence in extra-role, in-role and innovativeness[31,26,32]. Lasrado Zakaria suggests that organizations can address stakeholder pressure to engage in environmental management by utilizing GTFL, which motivates and inspires employees to demonstrate environmentally responsible work behaviors to achieve green performance[33]. Therefore, GTFL execution within the organization ensures the employees' green passion, green creativity and innovation and thus guarantees the firm positive performance. This research, for the GTFL that RBV supports, has taken into account the following hypothesis:

H2: GTFL is positively correlated with the Belgium Manufacturing Industry GPM

HO2: GTFL is not positively correlated with the Belgium Manufacturing Industry GPM

2.4. Green cross-cultural perspectives

Cultural values aim to establish a deepening relationship between the organization and its employees. It offers a significant guideline that must be followed, acted upon and implemented by each employee to sustain the positive environment of the organization. In this research, green cross-culture practices mean implementing such kinds of environmentally sustainable practices that ensure the inclusion of diversity within the organizational setting[34]. Subramanian and Suresh assert that it involves the execution of environmentally sustainable practices that support the norms, cultural values and behavior of each employee[35]. In implementing Green cross-cultural practices, the employer needs to ensure the cultural values of all stakeholders to ensure the collective commitment to environmental sustainability in different cultural backgrounds[36].

The use of green cross-cultural concepts within organizations aims to achieve long-term sustainability. Several studies have mentioned the significance of green performance, such as sustainability, energy efficiency, export diversification, green policy changes, green innovation and the green ecosystem. Although these studies examine the elements that influence a green economy, they fail to acknowledge the connection between culture and a green economy[37-40]. On the other hand, it has been contended by previous scholars that organizations that are

environmentally conscious exhibit variations in their distinctive characteristics and value systems and that this distinction is culturally specific, particularly between independent and collectivistic societies[41,42]. Furthermore organizations that exhibit ecological consciousness not only experience a positive impact on their self-image but also actively promote a positive image of environmental responsibility among others[43].

Greet Hofstede's theory of cultural dimension could offer support for this variable in the research. Geert Hofstede's cultural dimensions theory, developed in 1980, analyzed individuals' workplace values and identified distinctions across three dimensions: power distance (ranging from small to big), uncertainty avoidance (ranging from strong to weak) and individualism or collectivism[44,45]. The individualism or collectivism of Hofstede's theory could help Belgium manufacturing organizations to identify their employees' perspectives in adopting the green cross-cultural perspectives. Sobering believes that when employees work in an environment where individualism focuses more, they might focus on their own goals and perks instead of eco-friendly actions. It can change how much they want to be part of or agree with those green ideas[46].

On the other hand, in societies where collectivism is important, the employee may work together to take care of their environment and make it last over time[46]. By paying attention to the individual or collectivist approach to green cultural views of employees, Belgium's manufacturing industry can easily adopt Green Performance Management. Thus, this research has taken into account the following hypothesis for this variable:

H3: Green Cross-Cultural Perspectives is positively correlated with the Belgium Manufacturing Industry GPM

HO3: Green Cross-Cultural Perspectives is not positively correlated with the Belgium Manufacturing Industry GPM

2.5. Conceptual framework

The conceptual framework in this research focuses on determining the relationship between Green R&D Investment, Green Transformational Leadership (GTFL) and Green Cross-Cultural Perspectives with the green performance management of the Belgium manufacturing organization. Several theories, including Technological Innovation Theory, RBV theory and Hofstede Cultural Theory, have been used to generate the relationship of each independent variable with the dependent variable. These theories help in explaining how Green R & D Investment, GTFL and Green Cross-Cultural Perspectives impact the Green Performance Management of the manufacturing organizations of Belgium.

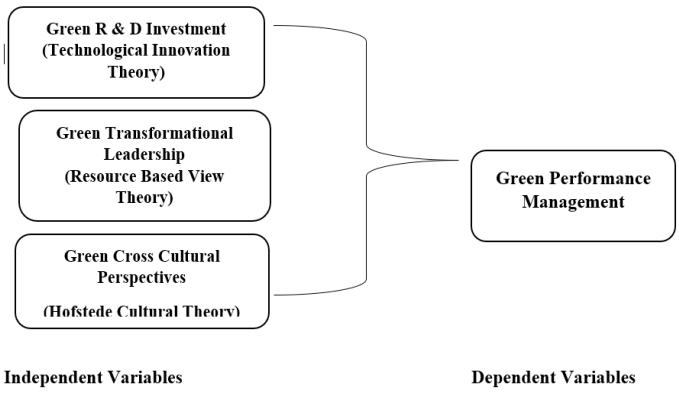

Figure 1: Conceptual Framework.

3. Methodology

This research determines the influence of the Green R & D Investment, GTFL and Green Cross-Cultural Perspectives in green performance management. A mixed method, including both qualitative and quantitative methods, has been used for data collection. According to Adu et al, Mixed-methods research designs provide a more comprehensive and profound understanding by providing an expanded depiction that may enrich the description and knowledge of the situations[47]. For the quantitative data, the top three manufacturing industries have been targeted. These industries were the Pharmaceutical Industry, Food and beverages Industry and Chemical Industry. Using a convenient sampling strategy, 300 employees, 100 from each industry, were chosen to fill out the questionnaires made on Google Forms. This questionnaire was sent to them on their email ID.

Furthermore, these employees were approached through their Twitter and LinkedIn accounts and questionnaires were sent to them after obtaining their consent and giving full assurance that their data would remain confidential. The questionnaire used the Likert scale, which spanned from 1 (indicating a strong agreement) to 5 (indicating a strong disagreement)[48]. This quantitative data was collected within the span of three months (August 2023 to October 2023). Gathering data from several firms in the aforementioned industrial sectors facilitates obtaining a wide range of perspectives on the correlation between independent factors and dependent variables. However, among 300 questionnaires sent to employees through social media accounts, only 274 questionnaires have been received. Among these 274 questionnaires, 253 questionnaires were filled and this data was further analyzed through the SPSS 26.

On the other hand, qualitative data was collected by interviewing the nine managers working in the three targeted industries. These managers were approached through their social media accounts. The focus group interview was conducted through Google Meet to determine their perspective regarding the influence of Green R & D Investment, GTFL and Green Cross-Cultural Perspectives influence on enhancing their green performance management. During the focus group interview, these four questions have been asked from the managers:

- What is green management and how does it impact performance in the organization you work for? What procedures are taken to evaluate the environment?
- How does your organization arrange resources for eco-friendly research and development projects?
- Describe your role as a leader in driving the environmentally sustainable initiatives in your organization.
- How has your organization employed diverse cultures to develop effective green practices? How do you manage and employ sustainability perspectives and techniques?

3.1. Questionnaire instruments

A variety of instrumental scales have been utilized to examine the correlation between the dependent and independent variables. Li et al. scale of four items developed for Green Developmental Behavior items were utilized to assess the degree to which manufacturing organizations in Belgium have adopted "Green Performance Management[49]". These items are

1) My organization is a highly conscious and mission-driven organization committed to ecological production and 2) My organization has a fund set aside just for green manufacturing. 3) My organization's leaders care about a sustainable environment and 4) My organization usually equips employees with green production-related skill development.

To measure the Green R&D investment, Mendes (2012) and Chen et al (2006) scale items have been utilized. These include four items which are 1) Green R&D investment mitigates air, water and soil pollution; 2) Green R&D investment decreases hazardous material or trash emissions during processing; 3) Green R&D investment technology recycles garbage and pollutants for treatment or reuse; and 4) Green R&D investment employs emerging technologies to generate alternative energy[50,51].

Podsakoff et al. are additionally consulted for the assessment of green transformational leadership. Four items from their scale have been utilized to show GTFL's relationship with green performance management. These four items are (1) The green product development project leader motivates the team members for a sustainable environment; (2) The green product development project leader gives the team members a clear environmental vision to follow; (3) The green product development project leader unites the team to achieve environmental objectives; and 4) The green product development project leader implement environmentally friendly initiatives[52].

Furthermore, to test the "Green Cross Culture Perspectives", Hofstede collectivism and individualism scale items have been adapted. These adapted items are 1) My Organization does not encourage me to pursue my goals even if they harm the organization's environment; 2) My organization does not support me to prioritize my interest over organizational sustainability; 3) My Organization promotes an environmental sustainability mindset where teamwork is highly appreciated; and 4) My Organization utilize collective approach to achieve the green performance management[53,54].

4. Results

4.1. SPSS analysis results

The quantitative analysis has been performed through the SPPS software. Demographics analysis, reliability analysis, factor analysis, correlation and regression analysis have been performed the determine the relationship between dependent and independent variable. Each further explained below:

4.1.1. Demographic analysis

Table 1: Demographic Table.

		Frequency	Per cent	Valid Percent	Cumulative Percent
Year of Experiences	1 to 5 years	49	19.4	19.4	19.4
	5 to 10 years	82	32.4	32.4	51.8
	11 to 15 years	62	24.5	24.5	76.3
	More than 15 years	60	23.7	23.7	100.0
	Total	253	100.0	100.0	
Employee Industry	Pharmaceutical Industry	83	32.8	32.8	32.8
	Food & Beverages Industry	79	31.2	31.2	66.4
	Chemical Industry	91	36	36	100.0
	Total	253	100.0	100.0	

Table # 1 shows the demographics of the employees who filled out the questionnaire. According to the above table, 19.4% of employees have 1 to 5 years of experience, 32.4% of employees have 6 to 10 years of experience, 24.5% of employees have 11 to 15 years of experience and 23.7% of employees have more than 15 years of experiences. Among these employees, 32.8% of employees work in the pharmaceutical industry, while 31.2% work in the food beverages industry and 36% employees work in the chemical industry.

4.1.2. Reliability analysis

Table 2: Reliability analysis.

Dimension Name	Item Numbers	Cronbach's Alpha (ą) (Standardized) N=253
Green Performance Management (GPM)	4	0.835
Green R& D Investment (G R&D I)	4	0.921
Green Transformational Leadership (GTFL)	4	0.897
Green Cross-Cultural Perspectives (GCCP)	4	0.971

The reliability analysis for each variable is shown in Table 2. The internal consistency of the variables was evaluated in this research to assess the reliability of a scale. The process of reliability analysis involves determining the value of Cronbach's alpha, which is evaluated on a scale of 0 to 1, with 0.7 representing the minimum acceptable value[55]. The reliability of all the variables studied in the survey shows that they are trustworthy for measuring GPM in Belgium for manufacturing fields.

4.1.3. Convergent validity and exploratory factor analysis

Table 3: Factor analysis.

Dimension Name	Items	Factor Loadings	Kaiser- Meyer-Olkin (KMO) Values	Explained Variance (%)	Mean (Std. Deviation)	AVE
Green Performance Management (GPM)						
Organizations committed to ecological production	GPM1	0.856	0.789	88.067%	1.37 (0.917)	0.734
The organization has a fund for green manufacturing	GPM2	0.613			1.29 (0.979)	
Organization leaders care about a sustainable environment	GPM3	0.972			0.94 (0.899)	
Organizations usually equip employees with green production-related skill development.	GPM4	0.770			1.24 (0.931)	
Green R& D Investment (G R&D I)						
Mitigate air, water and soil pollution	G R&D I 1	0.933	0.856	92.747%	1.274 (0.893)	0.893
Decrease hazardous material or trash emissions during processing	G R&D I 2	0.716			1.378 (0.952)	
Recycles garbage and pollutants for treatment or reuse.	G R&D I 3	0.678			1.876 (0.956)	
Employs Emerging Technologies to Generate Alternative Energy	G R&D I 4	0.789			1.97 (0.962)	
Green Transformational Leadership						
Motivates the team members for a sustainable environment	GTFL1	0.692	0.774	93.113%	1.93 (0.95)	0.765
Gives the team members a clear environmental vision to follow	GTFL2	0.690			1.98 (0.971)	
Unites the team to achieve environmental objectives	GTFL3	0.653			1.26 (0.812)	
Implement environmentally friendly initiatives	GTFL4	0.784			11.27 (0.971)	
Green Cross-Cultural Perspectives						
Does not Encourage the pursuit of goals even if they harm the organization's environment	GCCP1	0.941	0.823	91.714%	1.34 (0.971)	0.845
Does not Prioritize personal interest over organizational sustainability	GCCP2	0.884			10.95 (0.962)	
Promotes an environmental sustainability mindset where teamwork is highly appreciated	GCCP3	0.678			1. 67 (0.971)	
Utilize a collective approach to achieve green performance management	GCCP4	0.567			10.95 (0.962)	

Convergent validity, as shown in Table #3, necessitates that the measurement model fulfils three crucial criteria: the average variance extracted (AVE) should be over 0.5, the factor loadings of all variables should exceed 0.5 and the composite reliability for each construct should transcend 0.7. The research used Fornell and Larcker's approach to examine the AVE values for each construct, as seen in Table 3 above[56]. The present measurement model was deemed legitimate since it satisfied all three criteria for each of the latent constructs. This is because the AVE value for all constructs, such as GPM, G R&D I, GTFL and GCCP, is greater than 0.5 and falls between 0.7 and 0.9. Furthermore, Kaiser-Meyer-Olkin (KMO) analysis was performed on the factor loadings. All of the factor loading values are greater than 0.5, as shown in the above table; thus, all variables are considered acceptable, fit properly and are unidimensional in the present research.

4.1.4. Correlation

Table 4: Correlation table.

	GPM	G R&D I	GTFL	GCCP

GPM	Pearson Correlation	1	.793**	.673**	.541*
	Sig. (2-tailed)		0	0	0.024
	N	253	253	253	253
G R&D I	Pearson Correlation	.793**	1	.654**	.721**
	Sig. (2-tailed)	0		0	0
	N	253	253	253	253
GTFL	Pearson Correlation	.673**	.654**	1	.526**
	Sig. (2-tailed)	0	0		0
	N	253	253	253	253
GCCP	Pearson Correlation	.541*	.721**	.526**	1
	Sig. (2-tailed)	0.024	0	0	
	N	253	253	253	253

Correlation analysis aims to investigate the association between many research variables. The Pearson Correlation Coefficient 'r' is determined by dividing the covariance of two variables by the product of their standard deviations[57]. If 'r' is greater than 0.7, it means there is a strong link between the two variables. Table # 4 shows the correlation among the different variables. As per the above table, G R&D I and GPM ad G R&D I, GCCP are highly correlated since their correlation values are greater than 0.7, 0.793 and 0.21, respectively. On the other hand, other variables share a moderate correlation since their correlation values are more than the lower correlation benchmark, which is 0.3.

4.1.5. Regression analysis

Table 5: Regression analysis.

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	Std. Error	Beta		
(Constant)	0.598	0.11		5.425	0
Green R& D Investment (G R&D I)	0.469	0.05	0.535	9.456	0
nal Leadership (GTFL)	0.15	0.062	0.147	2.408	0.017
Perspectives (GCCP)	-0.036	0.05	-0.039	-0.708	0.48

a. Dependent Variable: Green Performance Management (GPM)

Regression is a statistical technique used to examine the connection between two or more independent and dependent variables of interest. The significance value, also known as the p-value, is assessed to ascertain the influence of independent factors on the dependent variable. It tends to be lower than the threshold value of 0.05 [57]. Table # 5 shows that all the variables instead of Green Cross-Cultural Perspectives (GCCP) are significant since their p-values are less than 0.05. Whereas GCCP is insignificant as its p value is 0.480. Furthermore, G R&D I and GTFL beta values are positive, showing a positive relationship with the GPM (constant). At the same time, GCCP beta value is negative and thus depicts the negative relationship with GPM (constant).

4.2. Focus group interview

The focus group interview was taken from the managers to know their perspectives and catch their insights regarding the green initiative's influence on their organization. Questions were already prepared before the interview. Google Meet links were shared on their social media platform and all the selected managers were requested to join the link and become part of the focus group interview.

4.2.1. Question 1: Question No. 1 that was asked in the focus was regarding the green management in their firm and how it impacts organizational performance and how to evaluate it?

"In response to question one, the manager discussed how their companies handle green management and how it affects They talked about the need to include our management actions. It includes setting goals to be more environmentally friendly, starting green projects and checking results using special measures. Some participants hold the belief that implementing environmentally sustainable management practices has resulted in improved resource utilization, reduced environmental impact, enhanced brand perception and increased satisfaction among stakeholders. Additionally, these participants emphasized the significance of frequently assessing one's environmental friendliness through the utilization of systems, examinations and external opinions. It allows you to continue improving while adhering to your ecological objectives."

4.2.2. Question 2: Question # 2 was regarding that How does their organization arrange resources for eco-friendly research and development projects.

"In response to question # 2, the participants debated various approaches, including the allocation of resources toward research initiatives that prioritize the environment. They also deliberated on the possibility of collaborating with various groups, such as government organizations, as well as the application of specific funding for environmental protection initiatives. It has been suggested that allocating funds towards R&D should align with a company's long-term objectives regarding environmental sustainability. Additionally, they discussed the ways in which key executives can advocate for and encourage investment in environmental research. It may be done by highlighting future advantages and encouraging change. For them, obtaining adequate resources is crucial for developing ecological innovations, as has been universally acknowledged. They hold the belief that leaders ought to consistently assist and remain committed to this objective."

4.2.3. Question 3: The third question that was asked to respondents was to describe their role as a transformational leader to boost green initiatives in their organization. During the focus group conversation:

"They extensively discussed strategies for establishing unambiguous objectives in environmental conservation. They guaranteed that the preservation of the environment was highly esteemed and promoted within their culture. In addition, they offered assistance and resources to promote environmentally conscious behaviors. They emphasized the importance of leading by example and motivating and inspiring employees to embrace environmentally friendly practices. Additionally, they advocated for collaboration with both internal and external stakeholders."

4.2.1. Question 4: The fourth question was: How has your organization employed diverse cultures to develop effective green practices? How do you manage and employ sustainability perspectives and techniques?

"During a focus group discussion, participants recounted how their respective organizations incorporated elements of diverse cultures to develop environmentally sustainable practices. They emphasized the importance of valuing and supporting diverse cultures to gain new perspectives and ideas. According to some, their employers contribute to an environment that encourages employees from diverse backgrounds to share their unique perspectives on environmental conservation. However, on account of competing demands and limited resources, some employers believe that their employees should prioritize attaining their particular objectives before considering environmental sustainability. Additionally, individuals discussed the implementation of training programs and awareness campaigns as means to disseminate information regarding enterprise sustainability."

5. Discussion

While designing a product or service, it is now vital for the organization to ensure green performance to get an appreciable outlook in this competitive era[58]. The results generated through the quantitative analysis support the green R&D investment and green transformational leadership both significantly impact the positive green performance management in Belgium manufacturing firms. At the same time, the cross-cultural perspective does not have a significant effect on boosting green performance management.

Previous research papers have supported that investing in the R&D of green products or services helps in the growth of the organization. The art of the manufacturing organization in deciding where to invest helps them to boost their growth for the long term. Coad et al, in their research, supported that organizations should invest in R&D. If firms had not invested in research and development (R&D), their growth and relative profitability would have been lower. Contrary to expectations organizations that withdrew from investing in R&D would not have gained anything by doing so. Their research interpretation is that organizations must possess well-established competency in management and should know the art and science of how where and how to invest to effectively transform their R&D spending into real outcomes[59].

Similarly, Zharov also supports the R&D investment in manufacturing firms. Research has shown that upgrading technology at current manufacturing facilities may lead to a simultaneous increase in material productivity, the ratio of capital productivity and labour efficiency. However, this outcome is only possible under certain circumstances[60].

Furthermore, the focus group interviews taken from the manufacturing organization managers depict that the Belgium organization take green R&D investment seriously. The managers believe that it is required for the organization to educate themselves on the art of green investment and should need to align their R&D investment strategies with the organizational goals. It can be supported through the Chițimiea et al. assertion. They mentioned that in consideration of the growing importance of environmental concerns organizations are now placing significant emphasis on responsible, sustainable and environmentally friendly investment practices. This is in addition to the pursuit of profit maximization and environmentally harmonious development[61].

On the same hand, the research has also shown that the GTFL significantly improve green performance management. Leaders with a green transformational approach can inspire, support and motivate their organization's employees to adopt green practices and thus contribute to the art of performance management. This point is also supported in the He et al. research, which suggested that Small and Medium Enterprises should promote green creativity support green transformational leaders and green knowledge to enhance the overall organizational green performance[62]. Similarly, during the focus group interviews, the managers also mentioned the influential role of GTFL in green performance management implementation. They mentioned that their positive outlook and strategies as leaders for bringing environmental sustainability assured the protection of the organizational and societal environment. Lin et al. show a positive association between the GTFL and organizational sustainability. As per the researchers, the positive performance of the organization is directly concerned with the positive outlook of the leader. Leaders who focus on motivating their employees to adopt environmentally sensible approaches and utilize green practices build a sustainable organization[63].

On the other hand, the quantitative results of the research show no significant relationship between the green cross-culture perspective and green performance management. This result could be due to cultural variation among the employees. This research has taken into account the collectivist and the individualist approaches to determine the perspectives of the stakeholders of the manufacturing organization. Junsheng et al. research that was performed on the Malaysian food industry shows that some organizations take environmental sustainability as a collective approach and motivate their employees to play a positive part as a team in sustainable the performance of the firm, while on the contrary, other organizations support their employees to first focus on their growth and the goals achievements instead of working collectively for environmental sustainable[64,65]. Similarly, in focus group interviews, some managers support the collectivism approach, while some support the individualism approach. However, previous researches depict the organization should need to balance collectivism and individualism. As per Rhee et al, Cultural differences in collectivism and individualism have an adverse impact the organizational conflict in goal formation, employee behavior and the overall organization performance[66].

6. Limitations

This research possesses some potential limitations that should be noted. Firstly, the research has considered the small sample size that affects the results validity of the findings. Secondly, the research has only considered the manufacturing sectors of Belgium, neglecting the determination of the green practices in other industries. Furthermore, the data collection timeframe of three months can fail to note the long-term effect of green performance initiatives on green performance management.

7. Implications

This research overall shows that Belgium's manufacturing sectors are taking green initiatives seriously to enhance its green performance management. Belgium organizations, to foster the culture of green performance management, need to understand the art of resource allocation. For this, it needs to strengthen its R&D sector. The manufacturing sectors need to implement the training program regarding sustainable practices and environmentally friendly strategies for their leaders, as this research has proved that GTFL implementation enhances organizational performance. On the other hand organizations need to adopt culturally sensitive approaches and should focus on both individual and collectivist perspectives while engaging employees in environmentally friendly activities to ensure sustainable organization performance.

8. Conclusion

In the past, Belgium has played a significant role in implementing green initiatives throughout the state to ensure sustainability. Green initiatives play a crucial role in the manufacturing industry as they help gain a positive reputation in the consumer mindset. The green initiatives highlighted in this research are Green R & D Investment, Green Transformational Leadership and Green Cross-Cultural Perspectives. The research results proved that Green R & D Investment and Green Transformational Leadership ensure sustainability. Green Cross-Cultural Perspectives do not significantly affect sustainability, which is due to a lack of cross-cultural strategies.

9. References

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