Original Article
ISSN (Online): 2582-7472

ShodhKosh: Journal of Visual and Performing Arts
January 2024 5(1), 1161–1170

DISCUSSION ON THE IMPACT OF THE GREEN INNOVATION STRATEGY ON CORPORATE FINANCIAL PERFORMANCE IN THE AUTOMOTIVE SECTOR

Dr. K. Devi[1], Dr. Devadutta Indoria[2]

[1] Department of Commerce, DAV Autonomous College, Titilagarh, Odisha, India
[2] Department of Commerce, Vikram Dev University, Jeypore, Odisha, India

Corresponding Author

Dr. Devadutta Indoria,
devaduttaresearch99@gmail.com

DOI
10.29121/shodhkosh.v5.i1.2024.2922

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

Introduction: In the modern world of globalization increasing presence of technical aspect have opened the path for improved social development chances. These have also proved detrimental to the ecology and long-term growth in the automotive sectors. The goal of this research is to identify the mediating factors of developing the strategy that helps the industries to sustain the environment as well as earn maximum benefits.
Literature Review: This research highlights the convenient approaches of the green innovative strategy of automotive industrial sectors. The impact of greener strategy on the link between sustainable culture and environmental aspects is discussed with critical analysis in terms of quality production of life and business improvement.
Methodology: Primary quantitative approach of data collection helps to analyze the responses to 13 questions by 85 participants. This methodology part ensures the research analyzes primary data for solving all topic-related objectives and questions with positive positivism philosophy through SPSS software.
Findings: Findings section includes the results of three hypotheses based on the survey results. The demographical analysis along with descriptive analysis is discussed with the relational value of the variables.
Discussion: This green technology innovates the finance along with environmental regulation system in automotive sectors. Nature-focused development enabled critical ideas to connect, promoting sustainability and social conscience with industrial sectors.
Conclusion: The conclusion part states that this study ensures the approach of the development approach of green policies of technology in the areas of budget management and production development.

Keywords: Sustainability, Green Technology, Production Cost, Pollution Level, Renewable Energy

1. INTRODUCTION

In the modern area of competitive marketing procedures and customized demand of people automotive industries often face some critical obstacles. This industrial sector is based on the technical criterion of maximum production that becomes less profitable with the increased partition in the niche market. As viewed by Lin et al. (2019), this automotive sector needs to go through many societal and directional processes that can enhance the sustainability of the production procedure. Certain techniques of green innovation can elevate the acceptance of strategies for international performance.

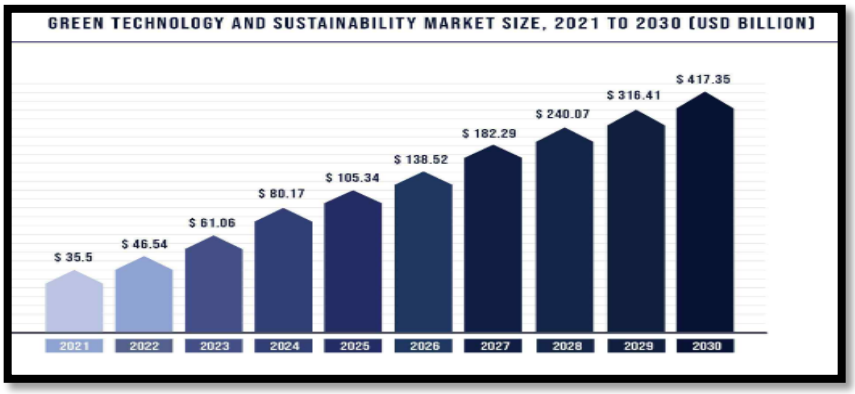

Figure 1: market size estimation of green innovative technology
(Source: Precedenceresearch, 2022)

Figure 1 highlights the estimated market capacity of green technology in the industrial sector (Precedenceresearch, 2022). In the year 2022, the revenue reached around $46.54 billion and the continual uprising graph according to the figure states that by the end of 2023, it can increase up to 50% more than the previous year.

The primary purpose of this research is to discuss the effects of green innovative technology in on the environment with a proposition for renewable energy. The Research objectives are as follows:

RO1 To discuss the positive influence of green technology on the environment
RO2 To evaluate the strategies for developing the quality of life through green innovation
RO3 To analyze the feasible economic impact of green technology in automotive finance
RO4 To discuss the impact of green innovation in the reduction of energy consumption

The probable research questions are

RQ1 How the invention of green technology positively impacts the environment?
RQ2 What are the strategies for upscaling the quality of life with the possession of green technology in the industrial sector?
RQ3 Why the economic influence of green technology is important in the financial performance of automotive industry?
RQ4 How can the green innovation policy reduce energy consumption for the manufacturing industry?

2. LITERATURE REVIEW

DISCUSSION ON THE IMPACT OF GREEN TECHNOLOGY ON THE ENVIRONMENT

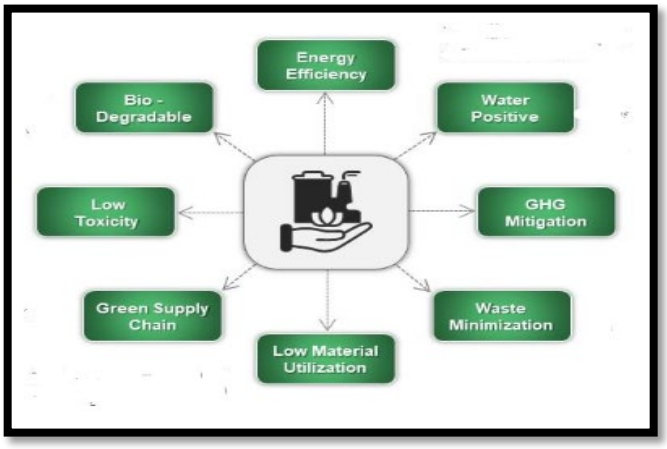

Figure 2: Green technology's positive impact on environment
(Source: Slideteam, 2023)

Figure 2 describes the impacts of green technology on multiple sections of environment management (Slideteam, 2023). The effectiveness of the water-saving process, lower material utilization hassle, usage of bio-degradable products in for the automotive industry, and waste management process gradually holds the control of green technology and leaves a positive impact in every industrial sector. As commented by Przychodzen, Leyva-de & Przychodzen (2020) the primary

objective of green technology is to lessen human impact on the planet, which benefits the environment. It is frequently associated with renewable energy because of this. Many environmentally friendly technology programs target carbon dioxide and other greenhouse gas emissions with the intention of lowering or eliminating emissions. A single instance is a solar energy. As opined by Li et al. (2020) on the industrial sectors, there is a upliftment awareness of how daily actions impact the natural aproposition and the promotion of green activity practices. The incorporation of a green culture into corporate strategy helps the industrial sector to grow in sustainability.

EVALUATION OF STRATEGIES FOR IMPROVING THE QUALITY OF LIFE WITH THE POSSESSION OF GREEN TECHNOLOGY

Figure 3: Relational impact of green energy on quality life
(Source: Jacknjillscute, 2019)

Figure 3 deals with the key aspects of green energy in the societal impact (Jacknjillscute, 2019). The factors of green products are by definition, environmentally friendly, lower expense in production management, Energy efficiency, recycling, health concerned renewable resources. As discussed by Sun & Razzaq (2022) all of these makes boost the quality production of human relations. Technology in green innovation not only looks at futuristic prospects but also helps the automotive industry look for funding from different investors to grow their businesses (Wicki & Hansen, 2019).

Green technological Process	**Practical usage in sectors**
Recycling	● Green innovation helps to recycle the waste material from old junk and allows it to be used for future purposes. ● This method has helped the automotive sector to reduce management costs and focus on durability.
Energy conservation	● In the modern innovation of electric and bio-diesel vehicles, green technology has a large impact on it. ● The usage of renewable energy like solar panels and biogas in the fuel section of vehicles has made a great impact in the automotive sector. ● This strategy saves a huge amount of production costs (García-Machado & Martínez-Ávila, 2019).
Pollution Control	● In the world of sustainability, the demand of people always bends toward the new and emissary prospect. ● Green technology is now a crucial component of how industries manage resources globally and has assisted in reducing pollution levels with modern technological implementation in vehicles .

Table 1: Green innovation component and usage
(Source: Muangmee, 2021)

Table 1 describes the core components of green innovative processes and their implementation in the automotive sectors (Muangmee, 2021). Ecosystems that sustained significant harm as a result of human participants is being given new life via the application of green or clean technology.

EVALUATION OF GREEN TECHNOLOGY ON THE FINANCIAL STRATEGY OF THE AUTOMOTIVE INDUSTRY

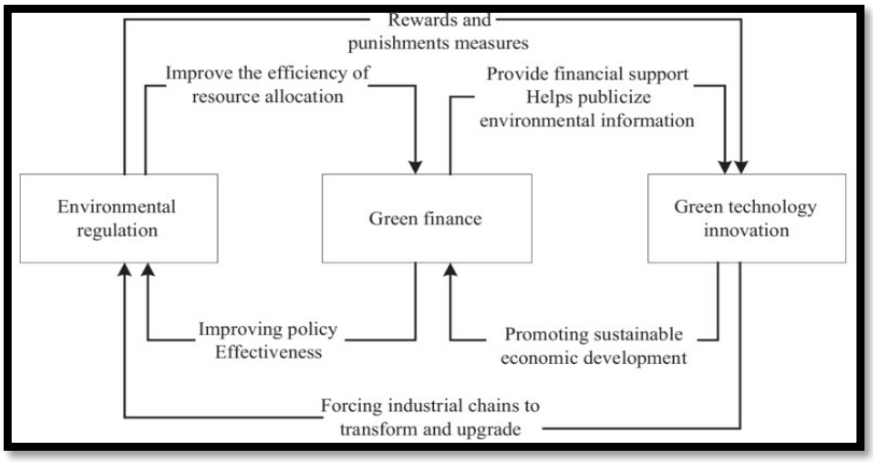

Figure 4: Cost efficiency factors of green nature in industrial propaganda
(Source: Researchgate, 2022)

Figure 4 portrays key aspects of green technology with the relational impact on the financial aspect of the automotive industry (Researchgate, 2022). The environmental regulation process improves the efficiency of certain technology that helps to build a green finance strategy. This process offers financial support to transmit an environmentally sustaining strategy. As viewed by Wang (2019) This gradually helps the automotive sector to have an impact on sustainable economic development. Green economic development is mostly fueled by innovations in green technology. The capability of the region's economy to achieve sustainable development depends on the suitability of the composition process system made up of green innovative technology, sustainable finance, and regulation in environmental.

3. METHODOLOGY

The research work follows the primary quantitative method of data collection. As viewed by Chouaibi, Chouaibi & Rossi (2022) the importance of collecting fresh data is very important for conducting the evaluation process correctly. The data is based on the responses of 85 respondents around different demographic areas. The targeted audience of the research work is supervisors and managerial authority of the automotive manufacturing industry. This methodology helps the research to get primary data for solving all topic-related objectives and questions. In this research positivism philosophy and deductive approach are followed for the methodology part. All the responses are analyzed in the SPSS software with proper steps and complex mathematical processes. As opined by Xie, Huo, & Zou (2019), the objective of the research is to gain the knowledge of the relationships among the variables of the analysis as well as to perform practice in the hypothesis model. The hypothesis process is justified by the successful result of the outcome. All the collected data has helped a lot to evaluate the study accurately.

4. FINDING AND ANALYSIS

HYPOTHESIS TESTING

HYPOTHESIS 1

H1 Green innovation technology in the automotive industry can sustain natural environment
H0 Green innovation technology in the automotive industry cannot sustain natural environment

HYPOTHESIS 2

H1 Green innovative strategy is capable of using renewable resources
H0 Green innovative strategy is not capable of using renewable resources

HYPOTHESIS 3:

H1 Green technology helps to reduce pollutants as resources for the industries
H0 Green technology does not help to reduce pollutants as resources of the industries

5. DEMOGRAPHIC DATA

GENDER

1. What is your Gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	25	29.4	29.4	29.4
	Male	50	58.8	58.8	88.2
	Prefer not to say	10	11.8	11.8	100.0
	Total	85	100.0	100.0	

Table 2: Gender Analysis
(Source: SPSS)

Table 2 describes the classification of gender for the research analysis. This division shows gender division in cumulative and valid percentages.

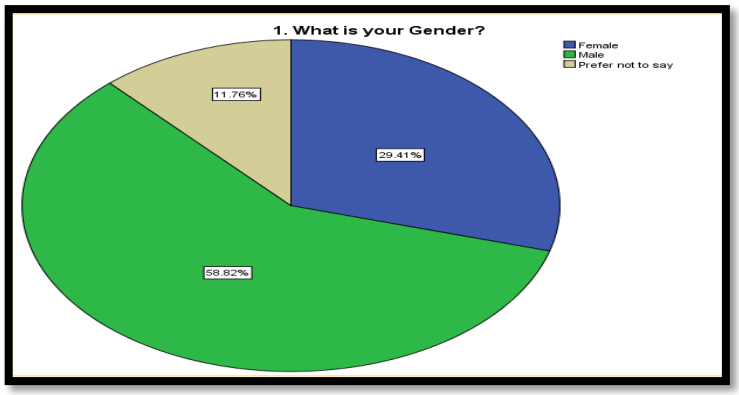

Figure 5: Gender Analysis
(Source: SPSS)

Figure 5 shows the sectional division of genders of the respondents of the survey. The male portion holds 58.82% of the whole respondents whereas the female section responds 29.41% for the survey. 11.76% of the participants do not want to disclose their gender. As discussed by Hsu et al. (2021), this pie chart describes the participation of individual gender that helps to maintain harmony in this analysis.

AGE

2. What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 to 20	20	23.5	23.5	23.5
	20 to 35	25	29.4	29.4	52.9
	35 to 50	20	23.5	23.5	76.5
	Above 50	20	23.5	23.5	100.0
	Total	85	100.0	100.0	

Table 3: Age analysis
(Source: SPSS)

Table 3 includes the results of the grouping of the age of the participants with the percentile nature classifies the age group in a valid and cumulative format.

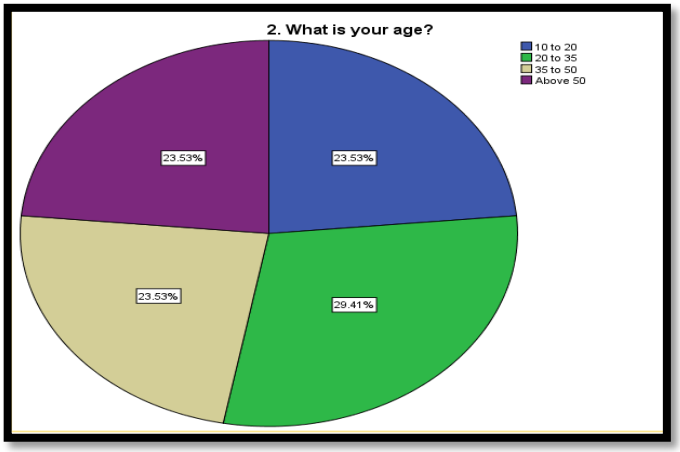

Figure 6: Age analysis
(Source: SPSS)

Figure 6 discusses the age group of the respondents of the analysis. This age analysis is classified into four different stages of age starting from 10 to gradually ascending order of 50 above. 29.41% of the participants belong to the age group of 20 to 35. In addition, the other three age groups of 10 to 20, 35 to 50, and people with the age of 50 and above holds 23.53% of their opinion on the survey. As stated by Kraus, Rehman & García (2020) this approach assists researchers in keeping the focus on age differences in the context of the hypothesis.

MONTHLY INCOME

3. What is your monthly Income?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10000 to 20000	25	29.4	29.4	29.4
	20000 to 35000	30	35.3	35.3	64.7
	35000 to 50000	10	11.8	11.8	76.5
	Above 50000	20	23.5	23.5	100.0
	Total	85	100.0	100.0	

Table 4: Analysis of monthly income
(Source: SPSS)

Table 4 highlights the monthly income division of the respondents who participated in the survey. The fragmentation depicts the results in cumulative and valid percentages of the hypothesis.

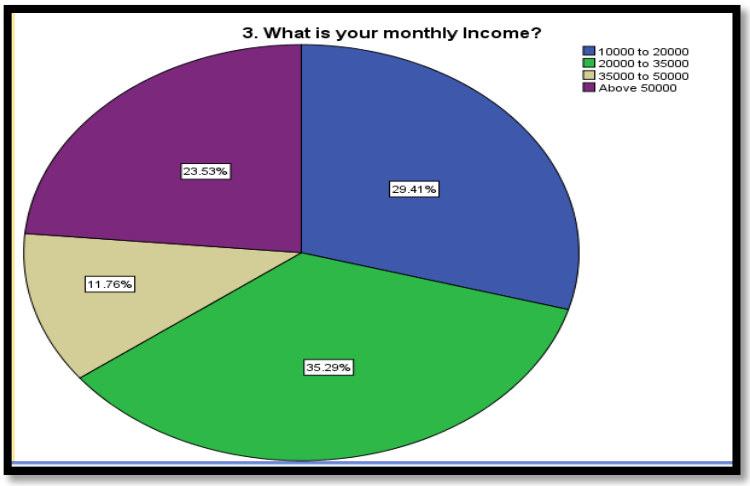

Figure 7: Analysis of monthly income
(Source: SPSS)

Figure 7 shows the division of monthly income of all the respondents who participated in the response survey. This figure highlights the sections of the monthly income of the respondents into 4 different parts. People with monthly income of 20000 to 35000 shared 35.29% of the overall responses. 29.41% of the people have their monthly income of

10000 to 20000. In addition 23.53% segment of people belongs to the group of monthly income of 50000 and above. As viewed by Tu & Wu (2021), different monthly income represent the class division in the current society as people with different earnings cannot have the same opinion on a specific topic due to diverse social awareness among individual.

6. DESCRIPTIVE ANALYSIS

HYPOTHESIS 1

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.790[a]	.624	.620	1.45124	.624	137.926	1	83	.000	2.486

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	290.487	1	290.487	137.926	.000[b]
	Residual	174.807	83	2.106		
	Total	465.294	84			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.221	.618		.358	.721
	IV1	.624	.053	.790	11.744	.000

Table 5: Hypothesis 1
(Source: SPSS)

Table 5 describes the results of the first hypothesis analysis with the regression values. This hypothesis contains 3 different structures and expresses the data values in a model summary, ANOVA, and coefficients. The significant value of this result is 0.00 which means the variables of the analysis are correlated and they share a strong connection among them.

HYPOTHESIS 2

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.636[a]	.405	.398	1.82639	.405	56.489	1	83	.000	1.827

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	188.430	1	188.430	56.489	.000[b]
	Residual	276.864	83	3.336		
	Total	465.294	84			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.138	.707		3.025	.003
	IV2	.454	.060	.636	7.516	.000

Table 6: Hypothesis 2
(Source: SPSS)

Table 6 discussed the outcome of the second hypothesis. The significant value of this research analysis is 0.00 which states that the variables are correlated and share a strong bond among them. As per the comments of Okafor, Adeleye & Adusei (2021), an accurate level of significance as per the decisive criteria is focused on in this hypothesis analysis with a prominent process of organizing data.

HYPOTHESIS 3

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.746[a]	.557	.552	1.57613	.557	104.302	1	83	.000	1.948

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	259.106	1	259.106	104.302	.000[b]
	Residual	206.188	83	2.484		
	Total	465.294	84			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.587	.579		2.742	.007
	IV3	.800	.078	.746	10.213	.000

Table 7: Hypothesis 3

(Source: SPSS)

Figure 6 represents the last result of hypothesis analysis that follows the strategy of the former 2 tables. The significant value of this analysis is 0.00 which simply states that the variables of the analysis are co-related and they also share a strong bond among themselves. As stated by Qing et al. (2022) the statistical value of any hypothesis test goes through several mathematical calculations that have to be programmed manually and with accuracy to expect the proper results.

7. DISCUSSION

Based on the entropy approach this research work addresses the bond between the coordination level of mechanism and green innovation in technology. As discussed by Seman et al. (2019), green financing and environmental regulation develop the local green innovation innovation helps to fund the companies with environmental regulation system in automotive sectors. However, there is a large gap in the process of coordination level among different regions that ensures ecosystem may start over and can be maintained this time. As described by Soewarno, Tjahjadi & Fithrianti (2019) organizations recognized that this paradigm change would impact market behavior and, as a result, sales, resulting in greater profits. This environmentally focused development enabled novel ideas to connect, promoting sustainability or social conscience in accordance with the organization's ideals. In other words, using this environmentally friendly approach in th manufacturing sectors can boost the approach of production and manage to reduce the expenses of the industrial budget. Therefore, it is crucial to have a system in place that can control and lower the amount of pollutants emitted into the environment. The strategic process serves to innovate the environmental performances.

8. CONCLUSION

In the concluding part, it can be stated that the improvement of industrial efficiency must be directed by the comprehension of organizational prospect of culture. In order to communicate the values, standards, and guiding principles to their staff, managers need to comprehend the industrial circumstances. The practical inference derived from this study ensures the upliftment approach of greener technology in the areas of budget management and profit generation along with sustaining the environment.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

REFERENCES

Chouaibi, S., Chouaibi, J., & Rossi, M. (2022). ESG and corporate financial performance: the mediating role of green innovation: UK common law versus Germany civil law. *EuroMed Journal of Business*, *17*(1), 46-71.

García-Machado, J. J., & Martínez-Ávila, M. (2019). Environmental performance and green culture: The mediating effect of green innovation. An application to the automotive industry. *Sustainability*, *11*(18), 4874.

Hsu, C. C., Quang-Thanh, N., Chien, F., Li, L., & Mohsin, M. (2021). Evaluating green innovation and performance of financial development: mediating concerns of environmental regulation. *Environmental Science and Pollution Research*, *28*(40), 57386-57397.

Jacknjillscute (2019), Retrieved from https://www.jacknjillscute.com/2019/08/5-benefits-of-green-technology.html

Kraus, S., Rehman, S. U., & García, F. J. S. (2020). Corporate social responsibility and environmental performance: The mediating role of environmental strategy and green innovation. *Technological Forecasting and Social Change*, *160*, 120262.

Li, L., Msaad, H., Sun, H., Tan, M. X., Lu, Y., & Lau, A. K. (2020). Green innovation and business sustainability: New evidence from energy intensive industry in China. *International Journal of Environmental Research and Public Health*, *17*(21), 7826.

Lin, W. L., Cheah, J. H., Azali, M., Ho, J. A., & Yip, N. (2019). Does firm size matter? Evidence on the impact of the green innovation strategy on corporate financial performance in the automotive sector. *Journal of Cleaner Production*, *229*, 974-988.

Muangmee, C., Dacko-Pikiewicz, Z., Meekaewkunchorn, N., Kassakorn, N., & Khalid, B. (2021). Green entrepreneurial orientation and green innovation in small and medium-sized enterprises (SMEs). *Social Sciences*, *10*(4), 136.

Okafor, A., Adeleye, B. N., & Adusei, M. (2021). Corporate social responsibility and financial performance: Evidence from US tech firms. *Journal of Cleaner Production*, *292*, 126078.

Precedenceresearch (2022),

Przychodzen, W., Leyva-de la Hiz, D. I., & Przychodzen, J. (2020). First-mover advantages in green innovation—Opportunities and threats for financial performance: A longitudinal analysis. *Corporate Social Responsibility and Environmental Management*, *27*(1), 339-357.

Qing, L., Chun, D., Dagestani, A. A., & Li, P. (2022). Does proactive green technology innovation improve financial performance? Evidence from listed companies with semiconductor concepts stock in China. *Sustainability*, *14*(8), 4600.

Seman, N. A. A., Govindan, K., Mardani, A., Zakuan, N., Saman, M. Z. M., Hooker, R. E., & Ozkul, S. (2019). The mediating effect of green innovation on the relationship between green supply chain management and environmental performance. *Journal of cleaner production*, *229*, 115-127.

Slideteam (2023), Retrieved from: https://www.slideteam.net/green-technology-positive-impact-and-advantages.html

Soewarno, N., Tjahjadi, B., & Fithrianti, F. (2019). Green innovation strategy and green innovation: The roles of green organizational identity and environmental organizational legitimacy. *Management Decision*, *57*(11), 3061-3078.

Sun, Y., & Razzaq, A. (2022). Composite fiscal decentralisation and green innovation: Imperative strategy for institutional reforms and sustainable development in OECD countries. *Sustainable Development*, *30*(5), 944-957.

Tu, Y., & Wu, W. (2021). How does green innovation improve enterprises' competitive advantage? The role of organizational learning. *Sustainable Production and Consumption*, *26*, 504-516.

Wang, C. H. (2019). How organizational green culture influences green performance and competitive advantage: The mediating role of green innovation. *Journal of Manufacturing Technology Management*.

3/publication/332666409_How_organizational_green_culture_influences_green_performance_and_competitive_advantage_The_mediating_role_of_green_innovation/links/5e789847299bf1892c0227e3/How-organizational-green-culture-influences-green-performance-and-competitive-advantage-The-mediating-role-of-green-innovation.pdf

Wicki, S., & Hansen, E. G. (2019). Green technology innovation: Anatomy of exploration processes from a learning perspective. *Business Strategy and the Environment*, *28*(6), 970-988.

Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of business research*, *101*, 697-706.