

# Green Innovation Practices: A study of green innovations practices and Its Impacts on Organizational and Environmental Performance

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## ABSTRACT

Now a day's pollution is one of the biggest global issues which is spreading rapidly throughout the world. The economy's overall development may not go "hand in hand" with the reduction of pollution and sustainable management of resources. To maintain balance between high resource consumption and development of economy relics is a constant challenge that forces organizations to run-through eco-friendly professional deeds having high economic worth. Present study also focuses on and establishes relationship between green innovations (GI) and organizational & environmental performance (OEP). The study aims to explore the impact of stakeholders' views on the practices of green innovation (GI), and their effects on organizational & environmental performance (OEP). Researchers have studied stakeholder's pressures and other pressure causes to use green innovation which ultimately resulted in organizational and environmental performance (OEP). A survey of 320 manufacturing and service organizations via self-administrated questionnaire with the help of convenient random sampling technique is conducted in Kanpur, Lucknow, Bareilly, Ghaziabad, and Noida cities of Uttar Pradesh out of 300 have responded to the questionnaire. SPSS 19 is used to perform reliability test of data used in the present study, descriptive statistics, co-relation and regression analysis. The findings suggest significant association between green innovations (GI) and organizational & environmental performance (OEP). The analysis was done using statistical techniques such as correlation analysis, multiple regression analysis, and inferential statistics as ANOVA.

**Keywords:** Green innovations (GI), Organizational & Environmental Performance (OEP)

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## INTRODUCTION

Environmental issues and ecological imbalance in nature has resulted in the devastation of various natural resources that has ultimately posed risk to mankind and nature. Our planet earth is suffering from numerous problems like pollution, deforestation, global warming, climatic changes and much more. Therefore, it is crucial to devise some solutions to combat such problems and make the environment green and clean to survive happily. In other words, we can say that we should go green to help nature flourish and prosper. Present study focuses on green innovation practices in industrialization which can be result in the development of organizational and environmental performance. Present study focuses on the various factors of green innovation practices which can be adopted for the organizational and environmental development. After gone through the literature and various studies on green practices, research has considered the various green innovative practices such as Green product & service (GPS), Green marketing (GM), Green managerial practices (GMP), Green process (GP) and Pollution-Preventing Methods (PPM). Present study also focuses on external and internal forces on entrepreneurs to adopt the green innovative practices. Research has described external forces as customers, competitors, government, community, vendor and suppliers etc and internal forces viz. employee, values, conduct, culture etc.

### Objective Of Research:

The objective of the research is as follows:

- To explore the relationship between green innovations (GI) and organizational & environmental performance (OEP)

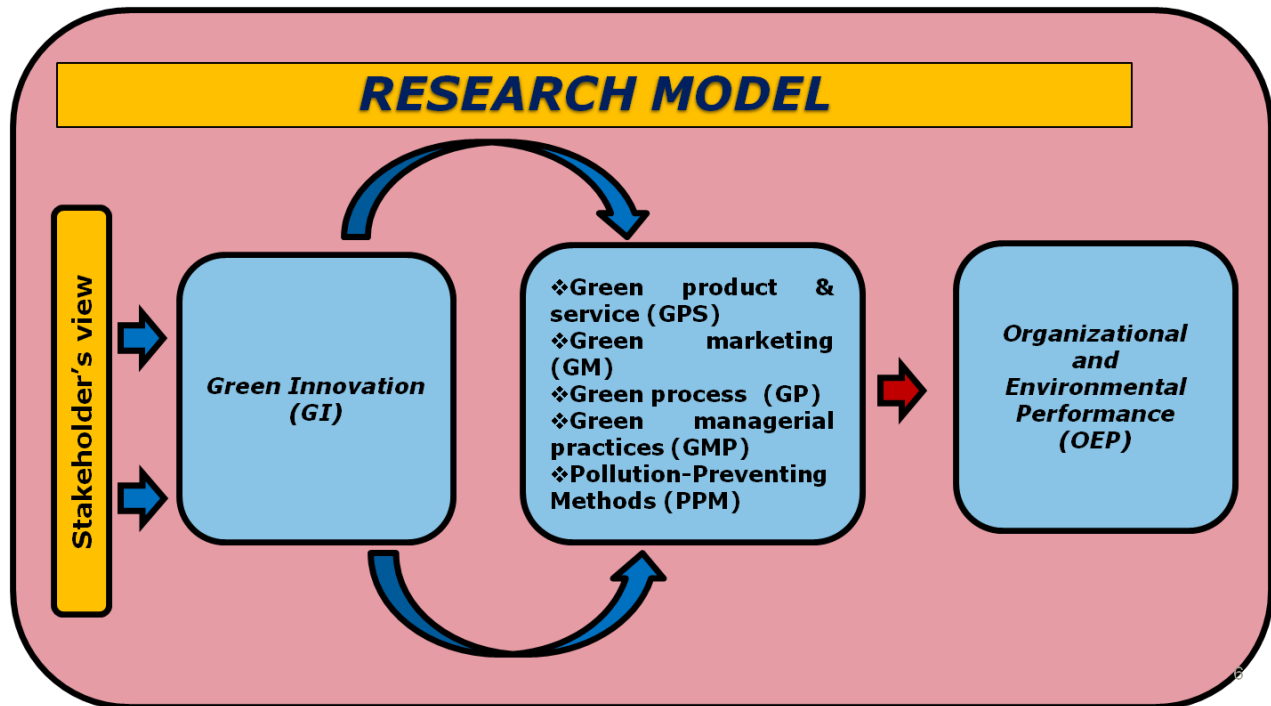
## REVIEW OF LITERATURE

Jaaffar and Amran (2017) found that the organizations' board of directors is involved in deciding eco-friendly strategies and policies while small business entities and proprietors decide GI (Huang et al., 2009). In addition, in manufacturing organizations in Germany, stakeholders have affected the firms' selections concerning ecological response forms (Murillo-Luna et al., 2008), and they were confidently related with unproved GI (Wagner, 2007); in contrast, the association among eco-friendly policies and stakeholders' administration was not perfect in Belgian organizations (Buysse and Verbeke, 2003). The review paper by Seman et al. (2018) concludes that the stakeholders' views have a more considerable influence on GI practices.

Works of GI are commonly divided into two types. The first describes GI as a firm's abilities (Gluch et al., 2009), whereas the second defines GI as an organization's environmental practices (Lin and Ho, 2008; Ho et al., 2009). When it comes to organizational practices, GI is described as "the hardware or software innovation related to green products or processes" (Song and Yu, 2018); it is proposed that GI comprises management practices and technological advancements that expand the environmental and organizational performance (OP) and provide a competitive edge to the firms (Rennings, 2000). Other researchers recommend that GI consists of unique or altered systems, processes, products, and practices that provide an advantage to the environment and subsidize firms' sustainability (Xie et al., 2019).

### Proposed Framework

This study involves the three dimensions of stakeholders' view (e.g., competitor pressure, government pressure, and employees conduct) as independent variables. Organizational and environmental performance is used as dependent variables. Moreover, GI practices (e.g., green product and green process) are used as mediators, and the moderating role is performed by innovation orientation (IO).



## RESEARCH METHODOLOGY

### Data Collection

A survey of 320 manufacturing and service organizations via self-administrated questionnaire with the help of convenient random sampling technique is conducted in Kanpur, Lucknow, Bareilly, Ghaziabad, and Noida cities of Uttar Pradesh out of 300 have responded to the questionnaire.

### Hypothesis

**H<sub>0</sub>:** There is no significant relationship between Green innovations (GI) and organizational & environmental performance (OEP)

**H<sub>1</sub>:** There is significant relationship between Green innovations (GI) and organizational & environmental performance (OEP)

## DATA ANALYSIS

### Test of Reliability

Table below shows that the reliability of variables of Green Innovation practices and were found 0.812 which is greater than acceptable value (greater than 0.70). It can be confidently claimed that the used instrument (questionnaire) for the purpose of analysis is highly reliable and valid.

Table no indicates, 10 no of items which are the means of variables taken in the study.

Reliability Statistics	
Cronbach's Alpha	N of Items
.812	10

### Descriptive statistics

From the table we can see the mean score is varying from 3.4312 to 3.8722 with the standard deviation of 0.54345 to 0.61326. The received mean scores explain that respondents were on the opinion 'agree' to 'strongly agree' as the items were put on Likert Scale from strongly disagree (1) to strongly agree (5) in the study.

Table : Descriptive analysis		
Variables	Mean	Standard deviation
Green product & service (GPS)	3.4312	0.56087
Green marketing (GM)	3.7686	0.54345
Green process (GP)	3.8234	0.58223
Green managerial practices (GMP)	3.6321	0.56221
Pollution-Preventing Methods (PPM)	3.8722	0.56233
Organizational & environmental performance (OEP)	3.7533	0.61326
Green innovations (GI)	3.8311	0.54368

### Correlation Analysis

Variables	GPS	GM	GP	GMP	PPM	GI	OEP
Green product & service (GPS)	1						
Green marketing (GM)	0.126	1					
Green process (GP)	0.167	0.723	1				
Green managerial practices (GMP)	0.212	0.397	0.565	1			
Pollution-Preventing Methods (PPM)	0.217	0.322	0.311	0.312	1		
Green innovations (GI)	0.233	0.267	0.322	0.398	0.443	1	
Organizational & environmental performance (OEP)	0.412	0.432	0.679	0.651	0.534	0.426	1

Above table explains relative degree of strength of relationship between the constructs of Green Innovation practices (GI) and Organizational & environmental performance (OEP). The relative values of constructs/variables show how much they are associated with others variable. The present study of correlation indicates that Organizational & environmental performance (OEP) is positively associated with the variables of Green Innovation practices (GI) viz. Green product &

service (0.412), Green marketing (0.432), Green process (0.679), Green managerial practices (0.651), Pollution-Preventing Methods (0.534) and Green Innovations itself (0.426)

**Table: ANOVA for Organizational & environmental performance (OEP) as dependent variable**

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	GI, GPS, GM, GP, GMP, PPM <sup>b</sup>	.	Enter
<b>a. Dependent Variable: OEP</b>			
<b>b. All requested variables entered.</b>			

**Table: ANOVA for Organizational & environmental performance (OEP) as dependent variable**

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	61.421	6	11.062	121.145	0.000 <sup>b</sup>
	Residual	24.867	293	0.189		
	Total	86.087	299			
<b>a. Dependent Variable: OEP</b>						
<b>b. Predictors: (Constant), GI, GPS, GM, GP, GMP, PPM</b>						

**Table: Model Summary for Organizational & environmental performance (OEP) as dependent variable**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.867 <sup>a</sup>	0.721	0.715	0.23211
<b>a. Predictors: (Constant), GI, GPS, GM, GP, GMP, PPM</b>				

Above table indicates that the value of r is 0.867. This value indicates the simple correlation between constructs of Green Innovation practices (GI) and Organizational & environmental performance (OEP).

The “r<sup>2</sup>” represents the variability in the outcome. The value of r<sup>2</sup> is 0.721. This value indicates that variable taken in the present study can account for 72.1% of the variation in the dependent variable i.e. Organizational & environmental performance and only 27.9 % of the variation in Organizational & environmental performance cannot be explained by these variables.

The adjusted “r<sup>2</sup>” represents the generalization of the model taken in the present study. Here, the difference between r<sup>2</sup> and adjusted r<sup>2</sup> is 0.6% (0.721 – 0.715= 0.006). This value represents 0.6% variance in the outcome if model had to be taken from population instead of sample.

**Table: Beta values and significance level for Organizational performance as dependent variable**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.517	0.198		2.298	0.002
	GPS	0.163	0.214	0.215	2.313	0.022
	GM	0.269	0.145	0.323	7.193	0.001
	GP	0.268	0.231	0.224	2.384	0.002
	GMP	0.212	0.123	0.264	3.447	0.001
	PPM	0.235	0.223	0.344	4.355	0.000
	GI	0.215	0.212	0.203	3.374	0.000
<b>a. Dependent Variable: Organizational &amp; environmental performance</b>						

Above table indicates the relationship between variables of Green Innovation practices (GI) and Organizational & environmental performance (OEP). Positive value indicates there is a positive relationship between the variables.

**The Regression Equation derived from regression analysis is as:**

$$\text{Organizational \& environmental performance} = 0.517 + 0.215 (\text{GPS}) + 0.323 (\text{GM}) + 0.224 (\text{GP}) + 0.264 (\text{GMP}) + 0.344(\text{PPM}) + 0.203 (\text{GI})$$

**Inferential Statistics**

Inferential statistics, unlike descriptive statistics, brings out inferences about the phenomenon under study with regard to the selected sample. Various methods like correlation, regression, ANOVA etc. are used by researchers to draw inferences about the sample under study.

For the purpose of hypothesis testing researcher examined the significance value (f value) in the present study. Researcher considered the level of confidence as 95% than the alpha would be 5 % i.e. 0.05%. If significance (f) value is less than 0.05, the alternative hypothesis will be accepted and null hypothesis will be rejected.

**Test Of Hypothesis**

**H<sub>0</sub>:** There is no significant relationship between Green innovations (GI) and organizational & environmental performance (OEP)

**H<sub>1</sub>:** There is significant relationship between Green innovations (GI) and organizational & environmental performance (OEP)

<b>Test of Homogeneity of Variances</b>			
OEP			
Levene Statistic	df1	df2	Sig.
3.120	6	90	.008

<b>ANOVA</b>					
OEP					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	5.465	9	.607	4.272	.000
Within Groups	12.792	90	.142		
Total	18.257	99			

In ANOVA test, researcher considered Green innovation (GI) as independent and Organizational & environmental performance as dependent variable.

In above table, we can see the significance value is less than the value 0.05. Therefore researcher rejected Null hypothesis and researcher found that There is significant relationship between Green innovations (GI) and organizational & environmental performance (OEP).

**FINDINGS AND CONCLUSION**

The researcher hypothesized in the basic frame work of the study. The results showed that hypothesis has been rejected giving the acceptance of alternate hypothesis. The researcher also verified this result of hypothesis by conducting discussions with respondents. Thus the researcher became sure of result of test of hypothesis. At initial stage of empirical study the researcher tested pre design instrument (questionnaire) for data collection and tested it scientifically. The researcher used test of reliability for scale validation and found Cronbach Alpha value 0.812 which is greater than 0.70 the acceptable value of reliability of data. The variables used in the study were found positively correlated with each other, which proven positive correlation between Green innovations (GI) and organizational & environmental performance (OEP). The adjusted “r<sup>2</sup>” indicates the generalization of the model taken in the present study. The difference between r<sup>2</sup> and adjusted r<sup>2</sup> is 0.6% (0.721 – 0.715= 0.006). This value represents 0.6% variance in the outcome if model had to be taken from population instead of sample. “Go green” has been forcing internationally dynamic organizations to improve their green competencies endlessly, execute GI practices to prevent the environment from degrading further, and advance overall firms’ performance. Therefore, this study aims to identify the key factors affecting on the GI practices and its

impact on OEP from stakeholders' perspectives. From the results, it is concluded that competitive pressure has a positive and significant impact on GI practices.

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