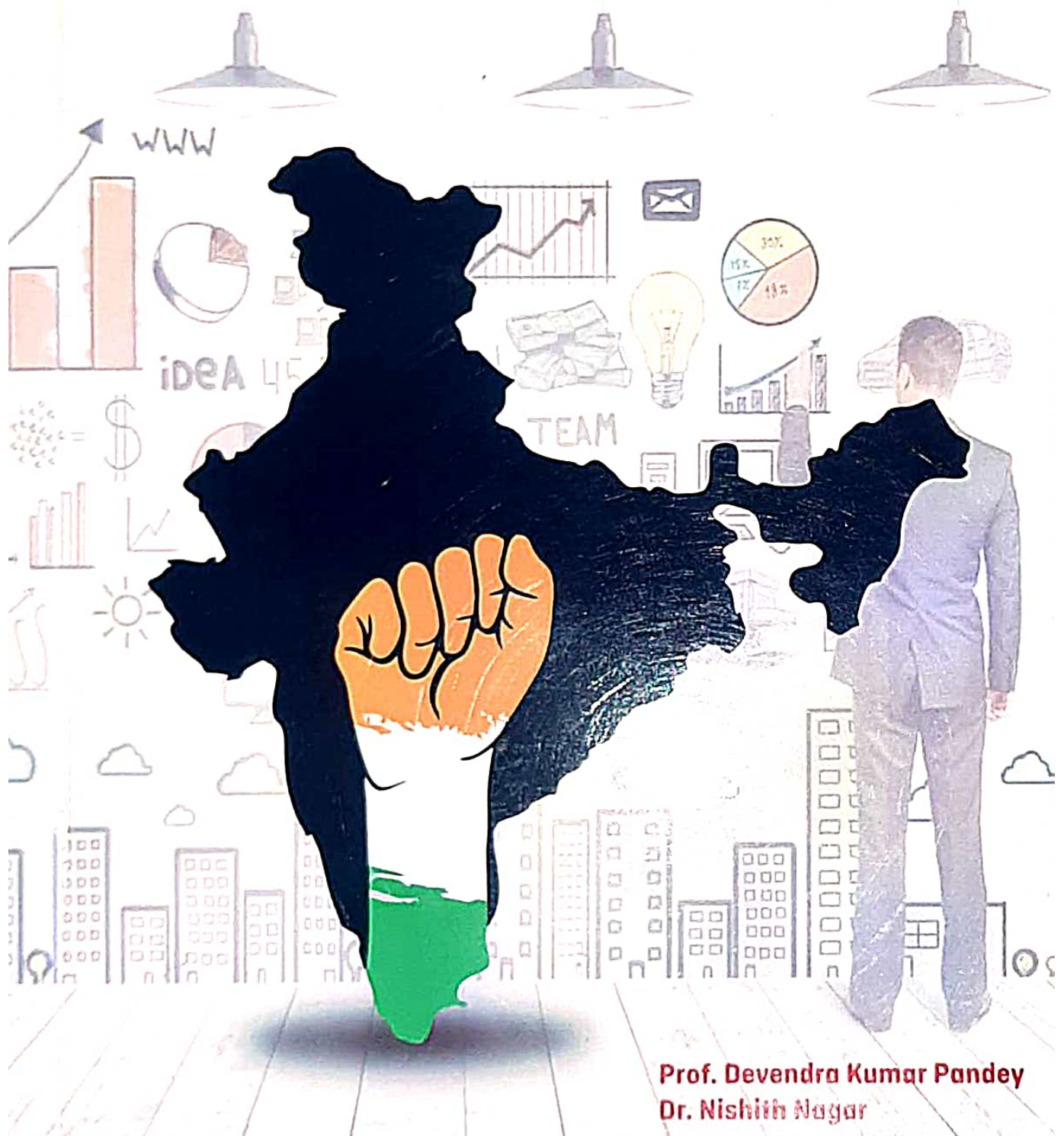




ENTREPRENEURSHIP:

A Way Forward For An "Atmanirbhar Bharat."



Prof. Devendra Kumar Pandey
Dr. Nishith Nagar

Entrepreneurship:

A Way Forward For An

“Atmanirbhar Bharat”

Prof. Devendra Kumar Pandey

Dr. Nishith Nagar



World Lab Publication

E-mail : worldlabpublication@gmail.com

www.worldlabpublication.com

TF-2 Sec-1, Vasundhara, Ghaziabad,

Uttar Pradesh 201012 Phone: 9810080056

All rights are reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the copyright holder.

The authors are solely responsible for the content of the papers compiled in this volume. The publishers or editors do not take any responsibility for the same in any manner. Errors, if any, are purely unintentional and readers are requested to communicate such errors to the editors or publishers to avoid discrepancies in future.

© Editors : **Prof. Devendra Kumar Pandey**
Dr. Nishith Nagar

Publisher : World Lab Publication

Address : TF-2 Sec-1, Vasundhara,
Ghaziabad, Uttar Pradesh 201012

Phone : 9810080056, 9310388806

E-mail : worldlabpublication@gmail.com

Website : www.worldlabpublication.com

Title : Entrepreneurship: A Way Forward For An
“Atmanirbhar Bharat”

Edition : 2021

ISBN : 978-93-90734-17-7

Price : 650/-

Printed in : India

Content

<i>Title</i>	<i>Page No.</i>
Foreword.....	iii
Foreword.....	v
Preface	vii
Acknowledgements.....	ix
1. Women Entrepreneurship.....	1
<i>Chayanika Bhaduri</i>	
2. A Study on Awareness, Challenges and the Satisfaction Level of Thimphu Teachers' Towards Ramis.....	12
<i>Dr. P. Ramakrishnan</i>	
3. Relationship of SDG9 with Industry and Innovation: A Study on the Selected Indian States.....	31
<i>Dr. Sudipta Mondal & Gourab Das</i>	
4. "Artisanal Clusters of Jharkhand"- Scope of Vocal for Local Intervention.....	40
<i>Dr. G. Vijayalakshmi</i>	
5. Atmanirbhar Abhiyan an Impetus to Enterprenurship through E-Governance.....	49
<i>Tapu Maharna & Dr. Lipsa Das</i>	
6. Banks and Financial Institutions; The Backbone of Indian Economic Sector	57
<i>C. Manoharan, G.Ramachandran & PM Murali</i>	

Relationship of SDG9 with Industry and Innovation: A Study on the Selected Indian States

Dr. Sudipta Mondal

Assistant Professor

Dept. of Commerce

Jogesh Chandra Chaudhuri College

30, Prince Anwar Shah Rd, Kolkata -700033.

Gourab Das

Assistant Professor

Dept. of Commerce

Vidyanagar College

South 24 Parganas, W.B.

ABSTRACT

The Ninth Sustainable Development Goal score (SDG9) is related with the innovation, industry and infrastructure. In India, this score has been published since 2018 of the states and national level. Innovation Index score with the other related scores have been published by the Indian government also. Considering these two and other related information, the relationship and extent of impact on the SDG9 have been checked with the help of linear regression

and mediation models. Twenty seven states and union territories are selected and data are collected for two years. The analysis shows that innovativeness has a very significant role to achieve better industrial production as well as to improve SDG9. Infrastructures factors like power availability and capital expenditure of the states are having significant positive impact in the states Gross Domestic Production. The study also reveals that significant improvement in innovation and infrastructure are very much required for the north-eastern states and union territories. The study can be utilized in policy making at government level.

Keywords: SDG9, Innovation, Industry, Infrastructure, Indian States

Introduction:

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (IISD). There are 17 SDGs with 169 targets to reach by 2030. Among these goals, Sustainable Development Goal 9 (SDG 9) is centred on three main pillars: industry, infrastructure and innovation with 8 targets and 12 indicators. Considering the necessity of industries, innovation and infrastructure in Indian context. India has recently published Innovation index, Industry index and Easy of Doing Business Ranking of the states. No doubt, business organisation and industries play a huge role in the economic development of a country. Industry, innovation and infrastructure related issues are being very much emphasized recently by the government level and can be seen from Industry 4.0 revolution, Digital India initiative etc. However, Government of India has started to measure all these industrial and infrastructural factors of the states and converting into score. The SDG score are being published from 2018 in India. Considering this, little initiatives is given towards finding of the relationships among the pillars of SDG 9.

To that brief objective and after short introduction in section one, few literatures have been reviewed in section two. Section three is to describe the objective of the study. Section four is dedicated to the research methodology. Findings and analysis are given in section five and conclusions are given in section six.

Literature Review:

Very few paper can be found on this relationship related topic, specifically in Indian context. But, some literatures can be seen on the international perspective. Some, of them are narrated here.

Cordova & Celone (2019) have conducted literatures review on SDGs and innovation in relation to the business on the industrial perspective. Analysis are also conducted on stakeholders involvement, corporate reaction and people and metrics recently projected by Price water house Coopers. The results show that different stakeholders ask for the SDGs in a different way. A few SDGs appear to be more a prerequisite to achieve objectives and innovation has proven to be a driver of SDGs.

Ghosh et al. (2019) have developed SDG Index and through econometric analyses suggest that this index is a statistically significant to explain the “Ease of Doing Business index”, and FDI flows to the states.

Saha & Shaw (2019) have conducted a study at global standards by comparing GDPs of different countries against India. The paper advises reorientation of industrialisation in India through knowledge development to be the first mover in development. The paper has also discussed the scope of in depth industrialisation and its current priority and future necessity.

Bonilla et al. (2018) have conducted literature review on sustainability impact and challenges of Industry 4.0 on the basis of “deployment, operation and technologies, integration and compliance” in the long-run scenario. Mix results of positives and negative impacts are found. It has been recognized that some positive secondary effects derived from Industry 4.0 activities.

Mavuri et al. (2020), in their paper has presented the needs to find out essential elements of sustainable development in the era of digitization. Here, attempt has been made to know the association of SDG9 and Global Innovation Index scores of top countries. The trends in the variables indicate the need for more planned expenditure on ICT (Information & Communication Technology) and R&D in order to build a strong digitization. The study also confirms that

ICT development indicators are highly correlated with GDP Per capita, which is a factor of economic development indicators. The paper suggests that ICT is an important tool for SDG 9.

The studies are showing some relationship with simple statistical tools about the relationship of infrastructure factor (ICT) related with innovation and SDGs. Such studies on Indian context has not been reported that much. Considering these gaps, the present study has been initiated to realised the relationship of SDG 9, innovation and infrastructure in Indian context with the help of better statistical models.

Objective of the Study:

The objective of the present study is to understand the relationship of SDG9 with the performance of the industries and innovativeness of the Indian states.

Methodology:

This part consists of sample, variables, hypothesis, statistical tools and regression models.

- i) Sample: The sample consists of twenty seven states and union territories and data are collected for the year 2018 and 2019 on the basis of its availability. Total state-year data are of fifty four. All the data are taken from the SDG India Index Report, India Innovation Index Report and Statistics on Indian States.
- ii) Variables: The necessary variables are sustainable development score for 9th goal (SD9), innovation index score (INN), gross value added by the industries (VAIN), availability of power and electricity (POW), capital expenditure made by the states (CAP) and state gross domestic production at constant price (SGDP). The SD9, INN and VAIN are the main variables in this study. These are being used as dependent and independent variables considering the relevant hypothesis.
- iii) Hypothesis: Considering the main objective of the study, there are some sub-objectives and hypothesises are formed accordingly. All these hypothesises are alternative in nature. The hypothesis H1: VAIN has significant positive impact on SD9,

Hypothesis H2: INN has significant positive impact on SD9,

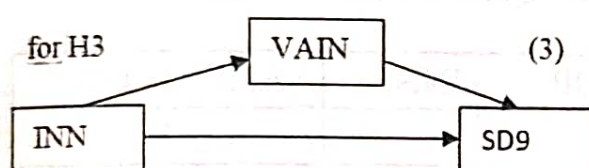
Hypothesis H3: INN has significant positive indirect impact on SD9 through VAIN and

Hypothesis H4: Infrastructures (POW and CAP) have significant positive impact on SGDP,

iv) Tools: Hypotheses are analysis on the basis of Pearson's correlation, regressions and mediation models.

v) Models: $SD9 = \alpha + \alpha_1 VAIN + \epsilon$ ----- (1) for H1

$SD9 = \alpha + \alpha_1 INN + \epsilon$ ----- (2) for H2



$SGDP = \alpha + \alpha_1 CAP + \alpha_2 POW + \alpha_3 VAIN + \epsilon$ ----- (4) for H4

5. Findings:

This analysis part consists of descriptive, correlation and regression analysis.

Table 1 Descriptive Statistics

	SD9	SGDP	INN	VAIN	POW	CAP
Mean	45.10	635618.00	18.70	145861.00	4257.00	29119.00
SD	21.00	622325.00	8.85	153379.00	4270.00	25523.00
Min	0.00	18740.00	6.20	2032.00	49.00	1536.00
Max	0.88	2630000.00	42.50	624430.00	15815.00	116799.00
	<i>Note.</i> N=54					

Source: Authors' Compilation

The Table 1 is showing mean, standard deviation (SD), minimum and maximum values of the selected variables. Here, it can be seen that the states are having huge disparity in their sustainable performance, innovativeness, domestic production and infrastructure from the high amount of SDs. Even there is the state with SD9 score zero (Mizoram, Nagaland) and one (Sikkim). The INN, VAIN

and POW variables are very much lower for the north-eastern states against other states in India. Most of the from south and west are having better values regarding SD9 score, INN and VAIN.

Table 2 is showing bi-variate Pearson's correlation of the selected variables. Here, it can be seen that almost all the variables are having positive and significant correlation values. The SD9 and INN correlation is showing that increase in innovation capacity or innovativeness of the states can also increase SD9 score by forty five percent. Increase in value addition by industries can also increase the SD9 score significantly.

Table 2 Pearson's Correlation Matrix

	SD9	SGDP	INN	VAIN	POW
SGDP	0.406**				
INN	0.450**	0.705**			
VAIN	0.424**	0.952**	0.618**		
POW	0.363**	0.956**	0.610**	0.933**	
CAP	0.317*			0.772**	0.866**
	0.859**				
	0.488**				
	<i>Note.</i> * $p < .05$, ** $p < .01$				

Source: Authors' Compilation

The Table 2 also shows that states' innovativeness can be increased by the power and capital expenditure factors as a substitute of infrastructure. The industrial value addition can also be increased by the availability of power, capital expenditure and innovativeness of the states.

The Table 3 is showing regression results of the previously mentioned equations and mediation model.

Table 3 Regression Results

	Eq-1	Eq-2	Eq-3	Eq-4
R ²	0.202	0.296	0.574	0.985
Adj R ²	0.187	0.282	0.329	0.984
F Statistics	13.200	21.800	12.501	1120.000
p Value	0.000	0.000	0.000	0.000
INN (p)	1.070 (0.000)	x	x	x
LVAİN (p)			x 6.800 (0.000) x	x
LCAP (p)	x	x	x	0.270 (0.000)
LPOW (p)	x	x	x	0.352 (0.000)
LVAİN (p)	x	x	x	0.349 (0.000)
INN->LVAİN->SD9 (p)	x	x	0.552 (0.000)	x
Dependent	SD9	SD9	SD9	SGDP

Source: Authors' Compilation

From the Eq.1 and Eq. 2, it can be seen that R² and adjusted R² values are within thirty percent and F-statistics values are significant at p<5%. The beta value of INN is positive (1.070) in Eq.1 and of LVAİN is 6.800 in Eq.2 with p<1%. These signifies that innovation and industry value addition have positive impact on the SD9 score. The Eq. 1 result is showing that increase in INN by one unit can increase the SD9 score by 1.070 unit and from Eq.2 it can be said that increase in VAIN by ten percent can increase the SD9 score by 6.800. However, taking VAIN and INN in a single equation with SD9 as dependent variable, shows insignificant and negative coefficient value of VAIN. Therefore, these problem has been transformed into mediation model, where impact of INN towards SD9 has been checked through the influence on VAIN. This is shown in Eq. 3 regression result with the help of Hayes Mediation model. Here, it can be seen that INN has significant positive impact on the SD9 through the positive influence on VAIN. It means that innovation has positive impact on the industry value addition, which again has

positive impact on the SD9 score. These results are favouring the hypotheses H1, H2 and H3.

The regression results of Eq. 4 is showing high value of R^2 and adjusted R^2 with significant value of F- statistics. Usually GMM non-linear regression models are used to analysis this type of equation. But, for simplification and easy understanding multiple linear regression model has been used. Here, the contributions of infrastructure and industry value addition are checked with the state gross domestic production (SGDP) as dependent variable. Results are showing that CAP, POW and VAIN coefficients are significantly positive. This supports the fourth hypothesis.

Conclusion:

From the study results, it can be said that the ninth Sustainable Development Goal scores are to be improved for the north-eastern states. Considering significant direct and indirect relationships, it may also be conclude that the States must emphasize on the innovation and infrastructure development for better industrial value addition and production. Considering the significant relationship of innovation and gross value addition by the industries, all states must try to improve innovation capacity for better realisation of sustainability goals.

Reference:

- Bonilla, S.H., Silva, H.R.O., ... Sacomano, J.B. (2018). Industry 4.0 and Sustainability Implications: A Scenario-Based Analysis of the Impacts and Challenges. *Sustainability*, 10, 3740, 1-24
- Cordova, M.F. & Celone, A. (2019). SDGs and Innovation in the Business Context Literature Review. *Sustainability*. 11, 7043, 1-14.
- Ghosh, N., Bhowmick, S. & Saha, R. (2019). SDG Index and Ease of Doing Business in India: A Sub-National Study. *Observer Research Foundation*, 199, 1-65.
- Mavuri, S., Chavali, K. & Kumar, A. (2020). A study on imperative innovation eco system linkages to map Sustainable

Development. *Conference Paper*, <https://www.researchgate.net/publication/341509895>.

- NITI Aayog. (2020). India Innovation Index 2020. National Institution for Transforming India, Government of India, New Delhi.
- NITI Aayog. (2019). India Innovation Index 2019. National Institution for Transforming India, Government of India, New Delhi.
- NITI Aayog. (2020). SDG India Index & Dashboard 2019-20. National Institution for Transforming India, Government of India, New Delhi.
- RBI. (2020). Handbook of Statistics on Indian States. Reserve Bank of India. Mumbai
- Saha, S. & Shaw, P. (2019). Revisiting Industrialisation and Innovation in India: Roadmap for SDG 9. 2030 Agenda and India: Moving from Quantity to Quality (Edt.), *South Asia Economic and Policy Studies*, Springer, 41-64.