

**ADAPTATION OF  
TECHNOLOGICAL  
ADVANCEMENT  
IN INDIA**



# **ADAPTATION OF TECHNOLOGICAL ADVANCEMENT IN INDIA**

## **Editors**

**Prof. Shweta Anand**

**Dr. Naveen Kumar**



**JSR PUBLISHING HOUSE LLP**

WZ 61/8A, Vashisth Park, Pankha Road, New Delhi-110046

## **Adaptation of Technological Advancement in India**

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ISBN: 978-93-94336-23-0

First Edition: 2023

*Published by:*

**JSR PUBLISHING HOUSE LLP**

**Corporate Office:** WZ-61/8A, Vashisth Park

Pankha Road, New Delhi-110 046

Ph.: 011-47581317, +91-9821497910

E-mail: [sales@jsrfg.in](mailto:sales@jsrfg.in) | Website: <http://www.jsrpublishing.in>

*Also at:*

Sujata Auditorium, Russian Complex, P.T.S. N.T.P.C.,  
Kahalgaon, Bhagalpur-813214

*Typeset by:* Mohd. Anwar Alam

*Printed in:* New Delhi

# PREFACE

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As the COVID Pandemic spread its tentacles to every corner of the world in the time frame of 2019 to 2021, it disrupted the existing supply chain that the world had so well established over the decades. The entire value-chain which is the backbone of an economy was totally disrupted and destroyed. The countries went into Lockdown mode and a new method of sustenance and survival became the need of the hour. In most product and service producing industries, being unable to cope, the labour force was drastically cut down. Most developed countries also faced an economic downturn. Since most economies are interdependent it created a domino effect. This combined with a vicious cycle that continuously shrank economic output, led to a global depression.

On the other hand the IT and the IT Enabled Industry not only survived but also thrived. There was an urgent need felt by other industries evolve their business model so that they could survive. A need to adapt to the remote working formula, be networked and part of the IoT emerged. For many businesses, having to reconsider and invest in technology was nothing short of an ultimatum against their very survival.

The second half of 2020 saw a boom for tech industry entrepreneurs. They were in a hurry to adapt the technology advancement in all industries. Need was felt to integrate technology into their business in the form of communication, manufacturing and distribution development. The need and willingness to adapt technology was running high in both product producing companies as well as service delivering companies. This created immense opportunities for tech founders, start-ups and unicorn companies not only in India but all across the globe.

This book showcases how technology was adopted in India in this time frame in various aspects that touch day to day lives such as Online Retailing, Online Education, Payments use mobile wallets, Technological advancement in Military and for promoting Tourism. It also dwells upon Digital Entrepreneurship Initiatives and how it is a key driver of rural economic prosperity leading to Sustainable Development. How technology is being used for outreach programs and marketing in Rural India has also been elaborated upon.

It also dives into how Artificial Intelligence (AI) and Block Chain technology are being adopted in India. How well consumers have adopted the technology to derive products and services has also been elaborated in the various chapters. In short we can say that is that this book 'Adaptation of Technological Advancement in India' takes a holistic view of the topic from multiple dimensions. The contents have been checked for plagiarism and the final accepted version is well below ten percent in every paper.

The culmination of various efforts into this book is a team work. 'Nothing is possible without Team Work', is what we believe. To start with we would like to thank the **Almighty God**, who supported us in this initiative and helped to complete it. We would like to put on record our Gratitude to **ICSSR** who funded the Two Day National Seminar Achievements@75 which was held in both Online and Offline mode on 26<sup>th</sup> and 27<sup>th</sup> August 2022. It helped us to get connected to various researchers PAN India. It enabled us to discuss among academicians and Industry professionals who had similar research interests topics such as Industrialization, Women Empowerment, Digitalization, Environment, Sustainable Development, Youth etc. We would especially like to mention the guidance and encouragement received from **Shri. M P Madhukarji Dy Director, ICSSR**. We would also like to acknowledge the blessings and encouragement received from **Shri V K Malhotraji, Member Secretary, ICSSR**.

We would like to thank the **Reviewers** for their valuable time and suggestions. Suggestions from an expert are an opportunity to learn and improve. We would also like to express our gratitude to all the Session Chairs and delegates who participated in the conference and ensured a healthy discussion. Special thanks to the **Book Chapter Authors** for contributing their work to this book. We are grateful for the overwhelming response and enthusiasm that truly exceeded our expectations. They also patiently upgraded the chapter multiple times till it was accepted.

We would like to thank the Research Scholars of Management Department, Gautam Buddha University, **Sh Naresh Kumar** and **Sh Shashank Sharma** whose untiring efforts helped us in putting things together. We would also like to take this opportunity to thank our **Parents, Mentors** and all our **Elderly** without whose blessings no achievement, big or small, is ever possible. We would also like to thank our **Spouses and Children** who patiently stood by us and supported us while we worked on giving it a final shape.

Dear readers, we hope that you will find the book to be helpful, inspiring, and useful. May you enjoy the contents as much as we enjoyed putting it together.

**Prof. Shweta Anand**

**Dr. Naveen Kumar**

# प्रो० पीयूष रंजन अग्रवाल

Prof. Peeush Ranjan Agrawal

Formerly:

- Professor (HAG), School of Management Studies  
Motilal Nehru National Institute of Technology , Prayagraj, India
- Vice-Chancellor, V.B.S. Purvanchal University, Jaunpur, U.P.
- Vice-Chancellor, A.P. Singh University, Rewa, M.P.

## Address:

21, Kamla Nehru Road,  
Near Manmohan Park, Katra,  
Prayagraj - 211002, India  
peeushra@rediffmail.com  
+91-9415218088

Date : 29.01.2023

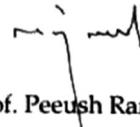
## Foreword

In India, the influence of entrepreneurship may be traced all the way back to the Indian Industrial Commission Report [1916-1918]. The start of 'Swadeshi movement' in 1905 served as the inspiration for the current 'Make in India' programme. Entrepreneurship is now seen as one of the most practical ways to create new job possibilities, via transforming society, putting thrust on development of infrastructure; promoting higher living standards; providing better community services. By the application of advance technologies, like Artificial Intelligence, Machine Learning, Blockchain, Robotics, Drones, and Virtual Reality, among others, radical changes in outlook of corporates as well as of the governments are being witnessed widely.

India began its tryst with globalisation approximately thirty years ago. The country has been quickly embracing a digital way of life in areas including e-commerce, e-learning, tourism and digital payments. When it comes to technology, the blockchain technology is undoubtedly the one that has gained a lot of attention recently. The blockchain technology was initially developed in 2009 to act as the public ledger for the Bitcoin network. Since then, it has found several applications in all industries throughout the world. Indian government is eager to create a national blockchain framework that will aid in reshaping the future of up to forty-four industries, including e-governance, farming, pharmaceuticals, and education.

Technology convergence, platform integration, and scattered network design have made huge gains for numerous businesses. Start-ups, innovations, and creative developments have changed entrepreneurship and helped to create jobs. Nanoelectronics, semiconductors, and IT-related startups are encouraged to perform research and development, innovate, and increase their product lines through the Electronics Development Fund (EDF). One such project, called SETU (Self Employment and Talent Utilization), intends to a project that strives to design, investigate, and create electronic goods for the nation.

The Editors of this Book titled '**Adaptation of Technological Advancement in India**' have covered vividly, multiple aspects of technological advancements made in the streams of customers' behavior, education, tourism and others. The Book shall be useful for the readers drawn from cross-sections of business entities including academia. I wish, both the Editors: Prof Shweta Anand and Dr. Naveen Kumar, the very best for their academic venture.



Prof. Peeush Ranjan Agrawal



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# 1

## India its Himalayan Advancement from Independence to Recent

**Dr. S. Sudha**

*Associate Professor*

*School of Management Studies,*

*Vels Institute of Science, Technology and Advanced Studies,*

*Email: srisudha.research18@gmail.com*

**Dr. D. Anitha Kumari**

*Associate Professor & Research Supervisor;*

*School of Management Studies,*

*VISTAS Chennai.*

*Email: anitha.sms@velsuniv.ac.in*

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### **Abstract**

*India has been a land of flourishing and development for many centuries. Major fields in India namely education, tourism, medicine and different industries have seen tremendous growth and flourishment. The introduction of the concept of digitalization in industry 4.0 has led to the adoption of technologies in various fields like manufacturing, and mass media. Being 2nd largest population as per MDG goals women empowerment is vital for the country's development and goal attainment. The SAARC countries have started to show great progress and improvement. India is one among them which is notable progress. India's resilience strategies have made the country move toward the path of progress.*

**Keywords:** *Independence, Industry 4.0, Education, Women empowerment*

### **INTRODUCTION**

India has been a land of flourishing and development for many centuries. The country has grown immensely since independence. Major fields in India namely education, tourism, medicine and different industries have seen tremendous growth and flourishment. The education growth of India is from an international perspective. Internationalization of higher education has made India a destination for all country students to learn and prosper. It is possible through education policies

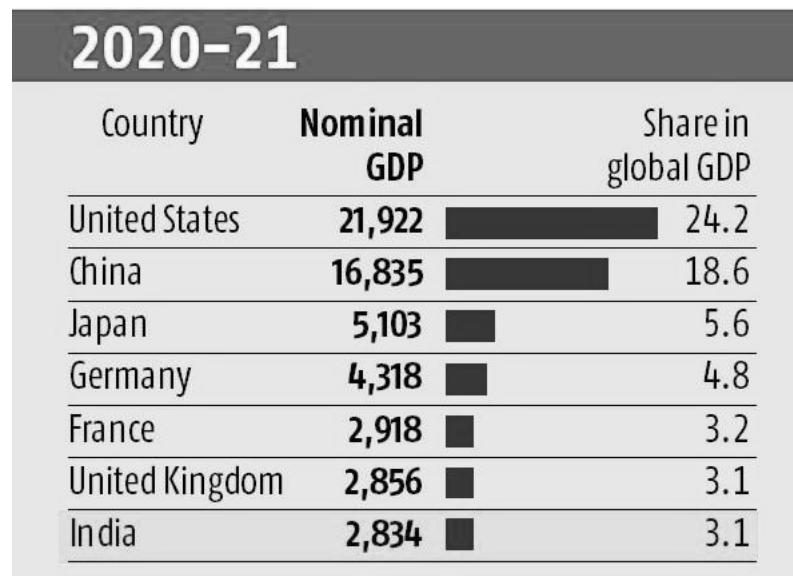
like improving enrolment and quality of education in government schools, schemes like education for all and mid-noon food for all children have made children come to schools. This is called educational intervention (Kingdon, G. G. 2007). which is required to make India an outstanding country destination for education.

Reviewing the women's development in India since Independence they have played a courageous and brave role during all times. The Indian women empowerment index has improved. India is placed in the 135th position in gender parity for the year 2022. The country has shown improvement in 5 different places including economic participation as per (The Economic Times 2022) report.

Indian medical industry has shown huge advancement and progress. India remains a role model in tackling the COVID-19 pandemic by providing vaccines to other countries. India has reached a sustainable position in this area.

In the industrial sector too, the country is fast improving. There are certain challenges, India faces while implementing Industrial 4.0.

Due to the country's fast development, the contribution to the world GDP has become realistic. This can be viewed through the below information chart on World GDP.



*Source: International Monetary Fund, World Economic Outlook, October 2020*

India's GDP Contribution to the world GDP is amazing. From the above information, we interpret that India's contribution is 3.1 per cent. The Americans and the European countries' contribution to the world GDP top the list. The concrete steps taken since Independence has paved the country to this level.

The introduction section comprises an overall view in the field of education, medicine, women empowerment and Industry 4.0. We shall see in detail regarding this in the coming section.

## OBJECTIVE OF THE STUDY

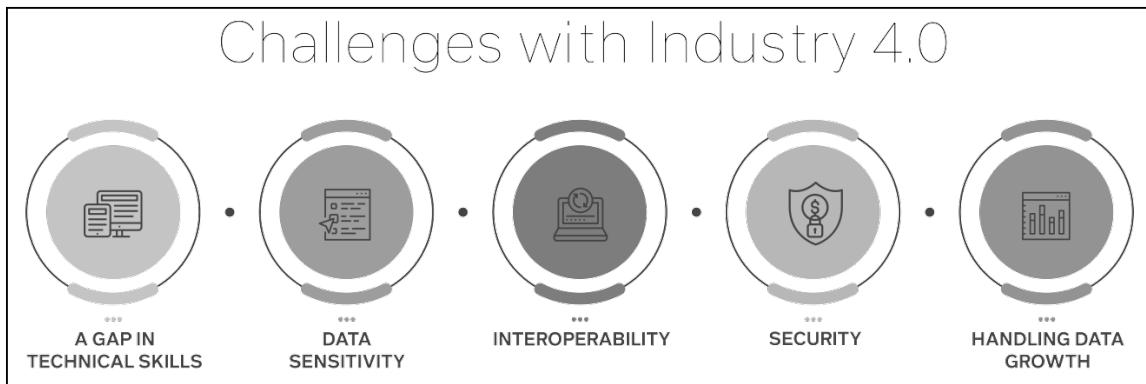
To review India's position since Independence in the field of women empowerment and Industry 4.0 and SAARC countries.

### Industries @ Indian Independence 75

The industrial revolution has led to technical advances and has brought great changes from the past to the present. The evolution and the revolution have been the real game changer for all industries throughout the world. Industry 4.0 have brought a lot of changes across the industrial settings. The introduction of the concept of digitalization in industry 4.0 has led to the adoption of technologies in various fields like manufacturing, mass media etc. It has also led to the introduction of new technologies like the Internet of things, big data, industrial cybersecurity, *visual monitoring of critical facilities, artificial intelligence (AI), cloud, edge, fog and more* additive manufacturing and 3D printing, digital twins, virtual and augmented reality, data models, data mapping.

The major challenges that exist are represented in the diagram.

Transformation and changes are two permanent words. Industry 4.0 tries to attempt towards technology-oriented solutions. Only certain industries like manufacturing companies have tried their hands by implementing technologies like data exchange, automation etc. Countries like Germany, Singapore, China and the US are the few countries have tried their hands for advancements. But India is still lagging behind in the adoption of Industry 4.0.



Source: [google.com](http://google.com)

Industry 4.0 have started to implement solutions and categories based on information and communication technologies in the international arena in the manufacturing sector. More usage of advanced technologies like IoT, artificial intelligence, and digitalization helps industries to advance. In India, the automation of manufacturing processes through AI and customized technologies has made Indian industries to be in the forefront.

## Women Empowerment @ Indian Independence 75

Empowerment is the tool to attain progress. Being 2nd largest population, women empowerment is vital for the country's development and goal attainment. Recognising women's freedom and autonomy leads to social advancements.

Concepts like women's self-help groups have improvised the contribution of women towards financial sustainability in recent years. Many financial institutions like NABARD, have been playing a vital role in this regard. Providing necessary freedom in decision making, awareness creation, knowledge creation and transfer will cement the necessary strength to women empowerment (Nayak and Mahanta, 2012).

Accessibility to IT, in India for women will lead to more empowerment and makes women participate in the labour market as per research study by (Chopra & Purohit 2022). The study further reveals that women need to be aware of the latest concepts in digitalization. Enhancing skills in the latest software will advance their employment opportunities and participation in the labour market.

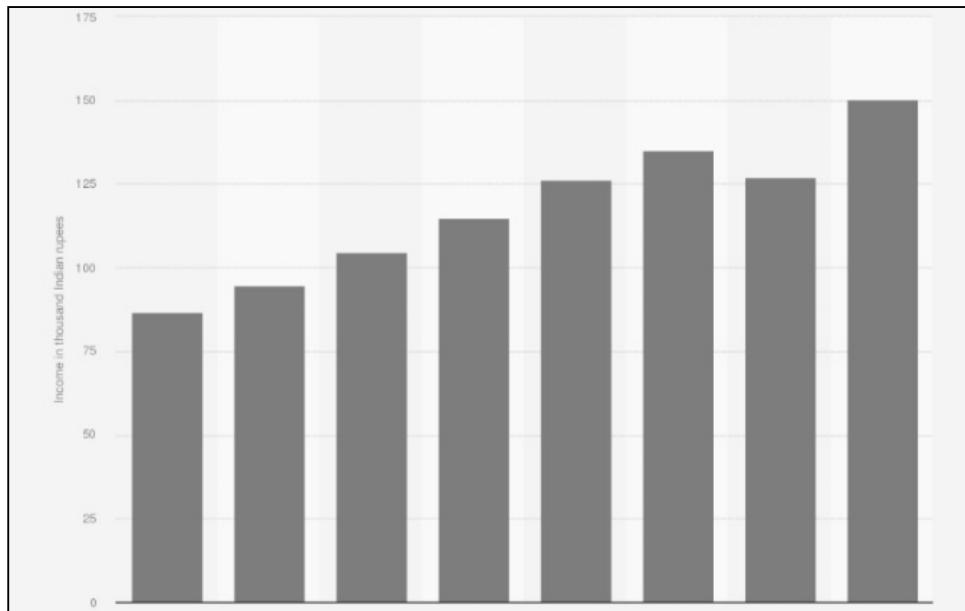
Compared to modern women empowerment, women empowerment in traditional and olden days i.e., in the Vedic period seems to be much better. Knowledge was gained by women through chanting mantras, learning and getting trained through Upanishads during the Vedic time (Lata, 2022)

The government of India schemes also encourages women empowerment in the country by launching various schemes, like Beti Bachao Beti Padhao Yojana, Mahila-E-Haat etc. which is proven successful in recent years (Giri, 2019).

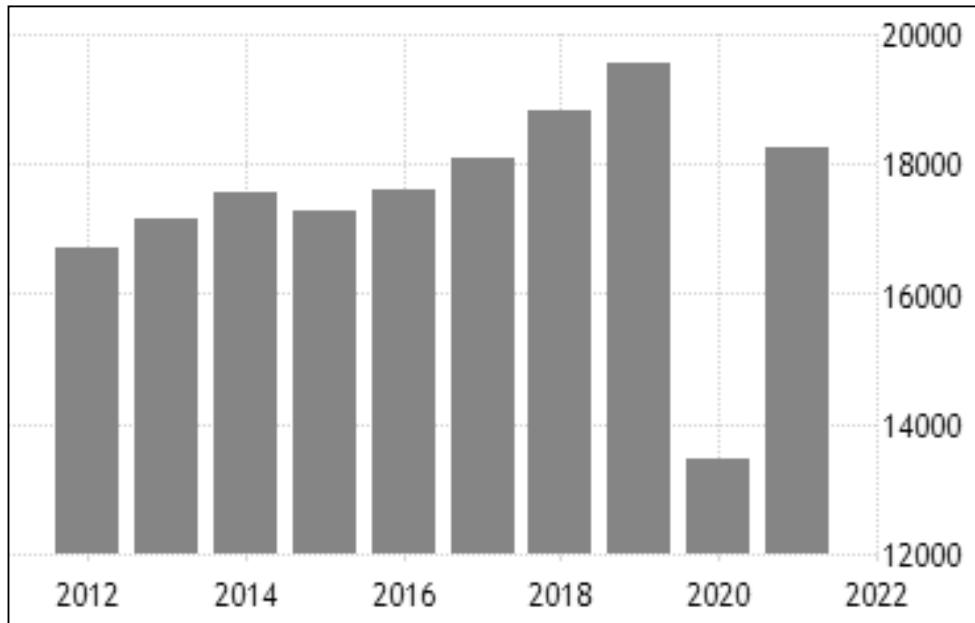
It is also important to create and retain data relating to women empowerment in India. Indices like the women empowerment index, knowledge and skill index and the creation of these indices as per time, shall highlight their participation in the present and in the future.

India has shown tremendous development when compared to other countries in all sectors and aspects. This situation can be analysed by looking into the status of India with other SAARC countries.

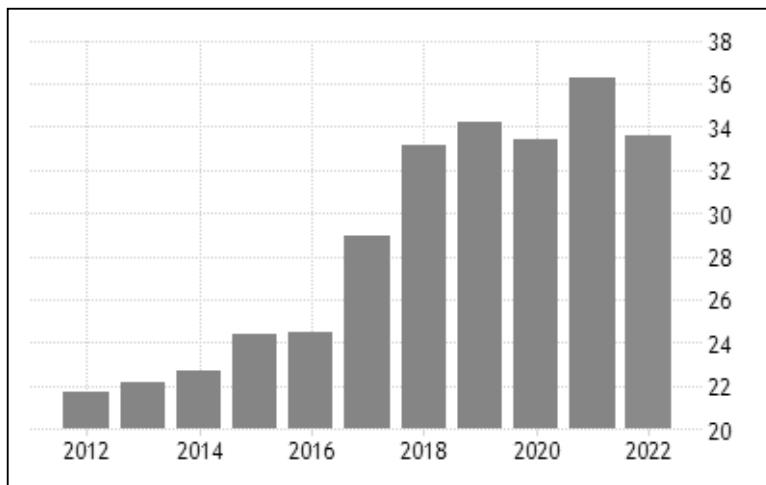
## India with SAARC Nations



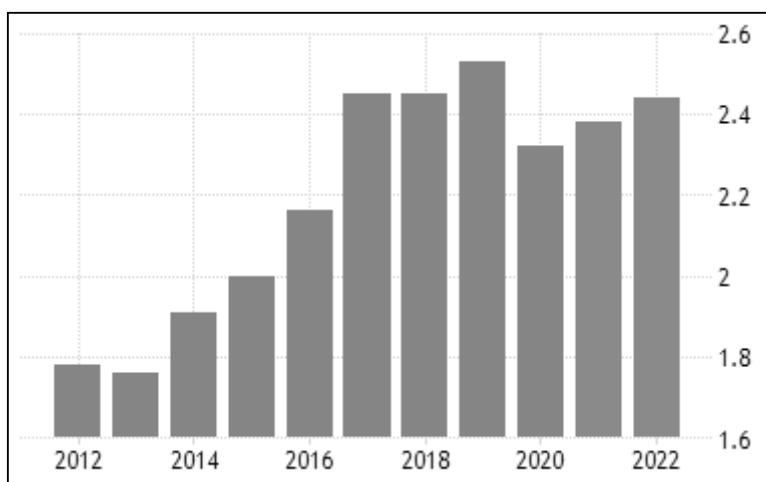
Source: [statistica.com](http://statistica.com), India per capita income



Source: [google.com](http://google.com) Maldives GDP Per Capita PPP-2022 Data- 2023  
Forecast 1995-2021 – Historical Chart



*Source: google.com Nepal GDP Per capita PPP-2022 Data-2023  
Forecast 1960-2021 – Historical Chart*



*Source: google.com Bhutan GDP Per capita PPP-2022 Data-2023  
Forecast 1980-2021 – Historical Chart*

India per capita income has improved. The SAARC countries have started to show great progress and improvement. India is one among them, which is notable progress. India has digital currency for trading, bringing clarity regarding income earned under cryptocurrencies (30 percent of income is taxable as per slab) are few strategies implemented by India. Indian stock markets have advanced India as a market destiny for growth.

The country exported USD 3 billion worth of goods to Sri Lanka. So we can see the development of the country through multiple strategies implemented by the government.

## CONCLUSION

India needs strategies for long-term sustainability. In order to overcome the challenges, India needs to automate industries, improvise its digital skills and provide more empowerment to women. This will create the country as an ultimate destiny.

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