



PROSPECTS OF ARTIFICIAL INTELLIGENCE (AI) AND PERSONALIZED LEARNING IN INCLUSIVE EDUCATION INTEGRATED TO THE NATIONAL EDUCATION POLICY (NEP) - 2020

VOLUME - I

Chief Editors

Dr.T.Mohana Sundari | Dr.P.Archanaa

Editors

Dr.B.Indira Priyadharshini | Dr.T.Vijaya Chithra
Dr.P.Gomathi Devi | Dr.M.Deepa
Dr.M.Shanmuga Priya | Dr.R.Ramya



PROSPECTS OF ARTIFICIAL INTELLIGENCE (AI) AND PERSONALIZED LEARNING IN INCLUSIVE EDUCATION INTEGRATED TO THE NATIONAL EDUCATION POLICY (NEP) - 2020

Chief Editors

Dr.T.Mohana Sundari

Assistant Professor, Department of Commerce (CA)

Dr.P.Archanaa

Assistant Professor & Head, Department of Commerce (CA)

Editors

Dr.B.Indira Priyadharshini | Dr.T.Vijaya Chithra

Dr.P.Gomathi Devi | Dr.M.Deepa

Dr.M.Shanmuga Priya | Dr.R.Ramya

Assistant Professor, Department of Commerce (CA)

Sponsored by

INDIAN COUNCIL OF SOCIAL SCIENCE RESEARCH (ICSSR-SRC)

Hyderabad.

Organized by

DEPARTMENT OF COMMERCE (CA)

NALLAMUTHU GOUNDER MAHALINGAM COLLEGE

An Autonomous Institution Affiliated to Bharathiar University

Re-Accredited with A++ by NAAC & ISO 9001:2015

Certified NIRF Ranking 101-150 Pollachi,

Coimbatore - 642001 Tamil Nadu

**PROSPECTS OF ARTIFICIAL INTELLIGENCE (AI) AND
PERSONALIZED LEARNING IN INCLUSIVE EDUCATION
INTEGRATED TO THE NATIONAL EDUCATION POLICY (NEP) - 2020**

© **Chief Editors**

Dr.T.Mohana Sundari, *Assistant Professor, Department of Commerce (CA)*

Dr.P.Archanaa, *Assistant Professor & Head, Department of Commerce (CA)*

Editors

Dr.B.Indira Priyadharshini | Dr.T.Vijaya Chithra

Dr.P.Gomathi Devi | Dr.M.Deepa

Dr.M.Shanmuga Priya | Dr.R.Ramya

Assistant Professor, Department of Commerce (CA)

ISBN: 978-93-94004-29-0

Price: Rs. 650.00/-

Copyright

All rights reserved. No part of this book may be reproduced, stored in a retrieval system or transmitted. In any form or by any means, mechanical, photocopying, recording or otherwise, without prior written permission of the author.

Printed at

SHANLAXPUBLICATIONS

61, 66 T.P.K. Main Road

Vasanthanagar

Madurai - 625003

Tamil Nadu, India

Ph: 0452-4208765

Mobile: 7639303383

[email:publisher@shanlaxpublications.com](mailto:publisher@shanlaxpublications.com)

[web: www.shanlaxpublications.com](http://www.shanlaxpublications.com)

PREFACE

The National Education Policy (NEP) 2020 emphasizes integrating Artificial Intelligence (AI) across all education levels to foster digital literacy, critical thinking, and future skills, viewing AI as crucial for personalized learning, efficient management, and teacher support through tools like adaptive platforms, chatbots, and data analytics, aiming for a learner-centric, inclusive, and future-ready system, with initiatives like the "AI for All" course promoting basic understanding among citizens. AI supports research, innovation, and the creation of innovative instructional technologies at the tertiary level. Furthermore, examined is AI's contribution to the National Educational Technology Forum (NETF), highlighting its significance in advancing legislative ideas along with the goals of NEP 2020. The National Education Policy (NEP) 2020 is a foundational shift in India's education system, aiming for holistic, flexible, and skill-based learning from school to higher education. It prioritizes foundational literacy, critical thinking, mother-tongue instruction, and multidisciplinary curriculum, aiming to foster innovation and equity, preparing students for a rapidly changing global landscape.

The edited volume of the book is a collection of research papers from eminent scholars, students, and academicians presented at the ICSSR-SRC Sponsored One Day National seminar on "Prospects of Artificial Intelligence (AI) And Personalized Learning in Inclusive Education Integrated to the National Education Policy (NEP) - 2020". This book is intended for scholars, industry professionals, and students who seek to understand the intersection of AI, Education Policy, and NEP 2020. We sincerely thank the Indian Council of Social Science Research ICSSR-SRC, Hyderabad, for conducting this National Seminar through sponsor. We extend our gratitude to the researchers, contributors, and industry experts, whose insights have shaped this work. We hope it serves as a valuable resource and a reminiscence master-piece for fostering responsible AI integration and driving sustainable innovation in the Education sector.

Seminar Convenor

Dr. T. Mohana Sundari

*Assistant Professor, Department of Commerce (CA)
Nallamuthu Gounder Mahalingam College, Pollachi.*

Organising Secretary

Dr. P. Archanaa

*Assistant Professor & Head, UG Department of Commerce (CA)
Nallamuthu Gounder Mahalingam College, Pollachi.*

CONTENTS

S. No	Title	Page no.
1	Professional Development for Educators to Effectively Use and Integrate AI Tools into their Pedagogical Methods Trishya Chaurpagar	1
2	Bridging the Digital Divide: A Critical Challenge to Inclusive Education Under NEP 2020 Dr. T. Vanjikkodi	9
3	Study on “Investigating AI'S Role in Foundational Literacy and Numeracy (FLN) and Competency-Based Education (CBE) is a Central Goal of the National Educational Policy-2020” Dr. S. Ramachandran	13
4	Circular Economy Adoption through Digital Transformation and its Impact on Firm Performance in the Technology Sector Dr. N. Ponsabariraj & Dr. S. Sridevi	21
5	Internationalization and Digital Transformation in Higher Education Dr. Jogomaya Paul	25
6	A Study on Designing Adaptive Learning Platforms in the Context of NEP 2020's Dr. K. Ganesh Kumar & Dr. M. Krishnaveni	31
7	Role of Artificial Intelligence in Promoting Inclusive Education in India Dr. K. Akila & S. Yamuna	35
8	Building Teachers AI Literacy Emphasized by the NEP 2020 Dr. C. Kothaiandal	40
9	Impact of Digital Divide on Online Education Dr. B. Divya Priya & Dr. K. Sudha	43
10	“Transforming Indian Education: Outcomes of the National Education Policy (NEP) and the Road Ahead” V. Murugesan	46
11	Artificial Intelligence and Personalized Learning: Transforming Inclusive Education Under NEP 2020 P. Divyabharathi	50
12	AI as a Learning Tool for Gen Z Learners in Line with Educational Reforms Mr. S. Rajagopalan & Dr. R. Shiddharthy	54
13	Professional Development for Educators to Effectively Use and Integrate AI Tools into their Pedagogical Methods Steffil Selcia	60

CIRCULAR ECONOMY ADOPTION THROUGH DIGITAL TRANSFORMATION AND ITS IMPACT ON FIRM PERFORMANCE IN THE TECHNOLOGY SECTOR

Dr. N. Ponsabariraj

*Assistant Professor, Department of B.Com (E-Commerce),
Nallamuthu Gounder Mahalingam College, Pollachi, Coimbatore.*

Dr. S. Sridevi

*Assistant Professor, Department of B.Com (Fin Tech),
PSGR Krishnammal College for Women, Coimbatore.*

1.1 Introduction

In recent years, the intersection of sustainability and technology has emerged as a central theme in global business transformation. The growing urgency of environmental challenges such as climate change, resource depletion, and electronic waste has compelled organizations to reimagine traditional linear models of “take-make-dispose.” This has given rise to the circular economy (CE)—an economic framework aimed at minimizing waste, optimizing resource use, and regenerating natural systems through practices like recycling, remanufacturing, and reuse. At the same time, rapid digital transformation—driven by technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), blockchain, big data analytics, and cloud computing—is reshaping how businesses operate, innovate, and deliver value. Together, these two paradigms offer unprecedented opportunities to unlock sustainable business models in the technology sector. The technology industry, while being an engine of innovation and growth, also contributes significantly to environmental degradation through high energy consumption, electronic waste, and short product life cycles. Integrating circular economy principles within this sector is therefore not only a strategic necessity but also a moral imperative for achieving sustainable development. Digital technologies provide the tools and intelligence needed to enable this transition—AI can optimize resource efficiency, IoT devices can track product lifecycles, blockchain can ensure supply-chain transparency, and big data analytics can support decision-making for sustainability.

1.2 Statement of the Problem

The technology sector, while being a driving force of innovation and global economic growth, increasingly faces challenges associated with environmental degradation, energy consumption, and electronic waste generation. The prevailing linear model of production and consumption—based on the “take-make-dispose” approach—has become unsustainable amid rising concerns about resource depletion and climate change. To address these challenges, the adoption of circular economy (CE) principles that promote resource efficiency, recycling, and product life-cycle extension has become imperative. This lack of integrated understanding hinders the development of sustainable and competitive business

strategies in the technology sector. Therefore, there is a pressing need to investigate how digital transformation can act as a catalyst for circular economy implementation and how this integration can unlock sustainable business models in the technology-driven era.

1.3 Objectives of the Study

- To examine how digital technologies contribute to the implementation of circular economy practices.
- To evaluate the influence of circular economy on overall environmental sustainability in the technology-driven business environment.

1.4 Research Methodology

The study followed a quantitative research design to analyze how digital technologies contribute to circular economy practices and their influence on firm performance. A total of 150 respondents from the technology sector were selected using the simple random sampling method to ensure fairness and representativeness.

The collected data were analyzed using descriptive statistics to determine mean, standard deviation, and variability of responses. Further, factor analysis was applied to identify the key dimensions influencing circular economy adoption on firm performance. The Kaiser-Meyer-Olkin (KMO) value and Bartlett's Test of Sphericity confirmed the suitability of the data for factor analysis.

1.5 Analysis and Interpretation

Table: 1.1

Digital technologies and resource optimization within the technology sector

Impact	N	Min	Max	Mean	Std. Deviation
AI-enabled process optimization	150	1	5	4.4538	.76802
IoT-based monitoring systems	150	1	5	4.3576	.58500
Blockchain transparency	150	1	5	3.8929	.88533
Big data analytics for waste reduction	150	1	5	3.7143	1.03962
Cloud-based collaboration platforms	150	1	5	3.5738	1.15825
Digital product lifecycle management	150	1	5	3.7619	1.07952
Smart manufacturing integration	150	1	5	3.8529	.87533
Resource optimization systems	150	1	5	3.7143	1.03962
Recycling process automation	150	1	5	3.6738	1.09825
Technology-driven circular innovation	150	1	5	3.8929	.88533

Source: Primary data

The analysis of digital technologies and resource optimization within the technology sector reveals that AI-enabled process optimization has the highest mean score of 4.4538, indicating strong agreement and consistency among respondents regarding its positive

impact on efficiency. IoT-based monitoring systems follow closely with a mean of 4.3576, showing that IoT is also highly valued for improving operational control and minimizing waste. In contrast, cloud-based collaboration platforms recorded the lowest mean score of 3.5738, reflecting moderate agreement and greater variation in opinions about their effectiveness. The findings suggest that AI and IoT play a crucial role in driving resource optimization and sustainable practices, while technologies like blockchain, big data, and cloud computing still show scope for stronger integration. Overall, digital transformation appears to be a key enabler of circular economy practices in the technology sector.

Factor Analysis

KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.726
Bartlett's Test of Sphericity	Approx. Chi-Square	354.56
	Df	28
	Sig.	.000

Table 1.2

The Influence of Circular Economy Adoption on Firms

Statement	1	2	3	4
Operational efficiency	.793			
Financial performance	.604			
Innovation capability		.643		
Environmental performance		.610		
Resource efficiency			.787	
Customer satisfaction and perception			.507	
Brand image and reputation				.881
Employee engagement in sustainability				
Eigen Values	1.309	1.105	1.080	1.006
% of Variance	16.366	13.809	13.496	12.573
Cumulative % of Variance	16.366	30.176	43.671	56.244

The table presents the results of a factor analysis conducted to determine the key dimensions influencing the impact of circular economy adoption on firms within the technology sector. The Kaiser-Meyer-Olkin (KMO) value of 0.726 indicates a satisfactory level of sampling adequacy, while Bartlett's Test of Sphericity ($\chi^2 = 354.56$, $p < 0.001$) confirms the suitability of the data for factor analysis. Four distinct factors were extracted with eigenvalues greater than one, explaining a cumulative variance of 56.24%, which is acceptable in social science research. The first factor, contributing 16.37% of the variance, is associated with operational efficiency and financial performance, highlighting the economic

and productivity-related benefits of circular economy practices. The second factor, explaining 13.81% of the variance, includes innovation capability and environmental performance, emphasizing the link between sustainability initiatives and innovative potential. The third factor, accounting for 13.50% of the variance, comprises resource efficiency and customer satisfaction, underscoring the role of optimized resource use in improving stakeholder perceptions. The fourth factor, contributing 12.57% of the variance, represents brand image and reputation, illustrating how circular economy adoption enhances corporate identity and sustainability branding. All factor loadings exceeded 0.5, confirming strong internal consistency and reliability of the identified dimensions.

1.6 Policy for Implications

The study's findings highlight the need for policies that strengthen the integration of digital technologies with circular economy initiatives in the technology sector. The strong influence of AI and IoT on resource optimization indicates that policymakers should promote greater investment in digital innovation and smart manufacturing systems to enhance operational efficiency and sustainability. Incentive-based policies such as tax benefits, subsidies, and grants can encourage firms to adopt advanced technologies that support recycling and waste reduction.

Conclusion

The study concludes that digital technologies significantly contribute to promoting circular economy practices within the technology sector. The findings reveal that Artificial Intelligence (AI) and the Internet of Things (IoT) are the most impactful tools in enhancing efficiency, minimizing waste, and optimizing resource utilization. In contrast, blockchain, big data analytics, and cloud computing show moderate influence, indicating the need for wider adoption and integration.

References

1. Scholtysik, M., Rasor, A., Petzke, L., Koldewey, C., & Dumitrescu, R. (2025). An integrative perspective on digital technologies and circular economy: A systematic literature review. *Proceedings of the Design Society*.
2. Digital technologies catalyzing business model innovation for circular economy – Multiple case study. (2021). *Resources, Conservation and Recycling*, 164, 105155.
3. Khan, S. A. R., Piprani, A. Z., & Yu, Z. (2022). Digital technology and circular economy practices: Future of supply chains. *Operations Management Research*, 15(3), 676-688.