

Emerging Frontiers In

**Interdisciplinary Research Artificial Intelligence,
Innovation and Sustainable Transformation**



Dr. Meenakshi Sharma

Dr. Ankit Raj Singh

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Research Artificial Intelligence, Innovation
and Sustainable Transformation**



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Emerging Frontiers in Interdisciplinary Research Artificial Intelligence, Innovation and Sustainable Transformation

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Preface

In an era defined by unprecedented technological advancement and increasingly complex global challenges, the landscape of research and innovation is undergoing profound transformation. Traditional disciplinary boundaries are progressively dissolving, giving way to integrative approaches that harness the strengths of multiple domains—particularly artificial intelligence (AI), innovation studies, and sustainability science. Addressing the multifaceted challenges of the twenty-first century—ranging from climate change and economic inequality to digital transformation and ethical governance—demands intellectual collaboration that transcends disciplinary silos.

This volume brings together a diverse community of scholars, practitioners, and thought leaders to examine the emerging frontiers at the intersection of technology, theory, and societal transformation. The book positions AI not merely as a technical toolset or computational methodology, but as a catalytic force capable of enabling transformative innovation across sectors. The contributions demonstrate how AI, when integrated with interdisciplinary insight, foster human-centric innovation can while upholding ethical integrity, environmental stewardship, and social responsibility.

The central proposition of this volume is that interdisciplinary research is not an academic luxury but a strategic imperative. The integration of AI with disciplines such as management, sustainability science, public policy, economics, and ethics generates richer analytical perspectives, supports responsible innovation, and strengthens our collective capacity to address complex societal challenges. By bridging technological, social, institutional, and ecological dimensions, this book seeks to advance research that is simultaneously rigorous, relevant, and impactful.

Readers will encounter not only theoretical frameworks and empirical investigations, but also critical reflections on the institutional, ethical, and methodological challenges that shape contemporary research practice. As the global community navigates uncertainty, disruption, and transformation, this volume aspires to contribute to a future in which knowledge is co-created collaboratively, applied responsibly, and directed toward sustainable and inclusive human progress.

Acknowledgements

The successful completion of *Emerging Frontiers in Interdisciplinary Research: Artificial Intelligence, Innovation, and Sustainable Transformation* has been made possible through the collective effort, intellectual generosity, and unwavering support of numerous individuals and institutions. We extend our sincere gratitude to all who have contributed to the development and realization of this volume.

First and foremost, we express our deepest appreciation to the contributing authors whose scholarly expertise, intellectual rigor, and interdisciplinary insight form the foundation of this work. Their research spans diverse domains—including artificial intelligence, innovation management, sustainability science, economics, ethics, and public policy—yet converges around a shared commitment to addressing complex global challenges. Their willingness to collaborate across disciplinary boundaries reflects the very spirit of this volume.

We are equally grateful to the peer reviewers for their meticulous evaluation, thoughtful critique, and constructive feedback on the submitted chapters. Their scholarly engagement significantly enhanced the academic quality, coherence, and clarity of this collection. The time, care, and intellectual energy they invested in this process are deeply appreciated.

Our gratitude also extends to our respective academic institutions and research centers for fostering an environment that encourages interdisciplinary inquiry. The administrative support, access to research resources, and institutional encouragement of collaborative scholarship were instrumental in bringing this project to fruition. We particularly acknowledge the institutional leadership that recognizes the importance of advancing research at the intersection of artificial intelligence and sustainable development.

We further acknowledge the editorial and publishing teams whose professionalism, patience, and attention to detail ensured the smooth progression of the manuscript from conceptualization to publication. Their guidance throughout the review, editing, formatting, and production processes has been invaluable.

Special appreciation is extended to colleagues, collaborators, and research assistants who contributed through scholarly discussions, data analysis, technical assistance, and administrative coordination. Although many of these contributions remain behind the scenes, they were essential to the successful completion of this volume.

Finally, we express our heartfelt gratitude to our families and friends for their continuous encouragement, understanding, and support. The sustained effort required for research, writing, and coordination would not have been possible without their patience and belief in our work.

We also acknowledge the broader academic and professional community engaged in research on artificial intelligence, innovation, and sustainability. It is the shared commitment to critical inquiry and responsible societal progress that inspires collaborative endeavours such as this. We hope this volume contributes meaningfully to ongoing scholarly conversations and serves as a catalyst for future interdisciplinary research dedicated to sustainable and inclusive transformation.

Dr. Meenakshi Sharma
Dr. Ankit Raj Singh

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ABOUT THE BOOK

Emerging Frontiers in Interdisciplinary Research: Artificial Intelligence, Innovation, and Sustainable Transformation explores the dynamic convergence of technology, creativity, and sustainability in shaping the future of global development. This volume brings together diverse perspectives from scholars, researchers, and practitioners who examine how artificial intelligence and innovative methodologies are transforming traditional disciplines and creating new pathways for collaborative progress.

The book highlights the role of AI as a catalyst for change across sectors such as education, healthcare, environmental management, industry, and public policy. It demonstrates how interdisciplinary approaches foster holistic solutions to complex global challenges, including climate change, resource management, digital transformation, and social equity. By integrating technological advancement with sustainable thinking, the contributors emphasize responsible innovation that balances economic growth with environmental and social well-being.

Through theoretical insights, empirical studies, and practical case analyses, the book provides readers with a comprehensive understanding of emerging research trends and their real-world applications. It encourages dialogue between disciplines, bridging gaps between science, technology, humanities, and management to promote inclusive and sustainable progress.

Designed for academicians, researchers, policymakers, and industry professionals, this volume serves as both a scholarly resource and a strategic guide. It underscores the importance of collaborative intelligence in navigating the complexities of the modern world and inspires forward-thinking solutions for a sustainable and innovation-driven future.



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