The Impact of Sustainable Energy Education on Achieving SDG-Oriented Energy Transitions

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Abstract

Achieving sustainable energy transitions under the Sustainable Development Goals (SDGs) requires not only technological innovation and financial investment but also widespread education and capacity building. Sustainable energy education plays a critical role in shaping knowledge, attitudes, and behaviors that support the adoption of clean energy solutions. This study examines the impact of sustainable energy education on achieving SDG-oriented energy transitions by analyzing the influence of perceived educational effectiveness and perceived sustainability awareness on sustainable energy adoption intention, with stakeholder trust acting as a mediating variable. A quantitative research design was adopted, and primary data were collected from 420 respondents, including students, educators, and energy sector professionals. Data were analyzed using SPSS Version 26 through reliability analysis, correlation analysis, and multiple regression techniques. The findings reveal that educational effectiveness and sustainability awareness significantly enhance stakeholder trust, which in turn positively influences adoption intention. The study highlights sustainable energy education as a foundational enabler of SDG-aligned energy transitions.

Keywords: Sustainable Energy Education; Sustainable Development Goals; Energy Transitions; Sustainability Awareness; Stakeholder Trust; Sustainability

Introduction

Sustainability challenges associated with climate change, energy insecurity, and environmental degradation have intensified the need for comprehensive energy transitions worldwide. While technological innovation and policy interventions are essential, the success of sustainable energy transitions ultimately depends on human knowledge, skills, and behavior. Education plays a crucial role in shaping the competencies required to design, implement, and sustain low-carbon energy systems. The United Nations Sustainable Development Goals (SDGs)

explicitly recognize education as a catalyst for sustainable development, particularly through SDG 4 (Quality Education), SDG 7 (Affordable and Clean Energy), and SDG 13 (Climate Action).

Energy transitions require not only the deployment of renewable energy technologies but also societal acceptance, skilled workforce development, and informed decision-making. Sustainable energy education encompasses formal education, vocational training, professional development, and public awareness initiatives focused on renewable energy, energy efficiency, and sustainability principles. These educational efforts support the development of technical expertise and promote behavioral change aligned with sustainability goals.

From a sustainability perspective, energy education contributes to long-term system transformation by empowering individuals and institutions to adopt and support clean energy solutions. Education enhances understanding of climate risks, environmental impacts, and the benefits of sustainable energy technologies, thereby fostering informed participation in energy transitions.

Sustainable energy education also supports innovation and workforce readiness. As energy systems become increasingly complex and digitalized, demand for skilled professionals in renewable energy, smart grids, energy storage, and low-carbon technologies continues to grow. Education systems must adapt to prepare learners for these emerging roles, supporting SDG-aligned economic development.

Beyond technical skills, sustainable energy education promotes values such as environmental responsibility, intergenerational equity, and systems thinking. These values are essential for addressing the interconnected challenges of energy, climate, and development. Education initiatives that integrate sustainability concepts across disciplines can enhance holistic understanding of energy transitions.

Despite its importance, the impact of sustainable energy education on actual adoption of clean energy solutions remains uneven. Variations in curriculum quality, accessibility, and relevance influence educational outcomes. Stakeholder perceptions of educational effectiveness—defined as the extent to which education equips learners with relevant knowledge and skills—play a critical role in shaping trust and engagement.

Perceived sustainability awareness is equally influential. Education that effectively raises awareness of sustainability challenges and solutions can strengthen commitment to SDG-oriented energy transitions. Trust in the credibility and relevance of educational programs is therefore essential for translating learning into action.

Existing research on sustainable energy education has primarily focused on curriculum development, pedagogical approaches, and learning outcomes. While these studies provide valuable insights, limited empirical research examines behavioral and perceptual factors linking education to sustainable energy adoption within an SDG-oriented framework. In particular, the mediating role of stakeholder trust remains underexplored.

This study addresses this gap by examining the impact of sustainable energy education on achieving SDG-oriented energy transitions. Specifically, it investigates how perceived educational effectiveness and perceived sustainability awareness influence adoption intention through the mediating role of stakeholder trust. By integrating education research with sustainability and behavioral analysis, the study contributes to energy transition and SDG literature.

Literature Review:

Recent literature emphasizes the growing importance of education and capacity building in enabling sustainable energy transitions. Studies highlight that energy education enhances technical competence, policy literacy, and public acceptance of renewable energy technologies, supporting SDG-aligned development pathways (IEA, 2022).

Perceived educational effectiveness has emerged as a key determinant of learning impact. Research indicates that education programs perceived as relevant, practical, and aligned with real-world energy challenges are more likely to influence attitudes and behaviors. Ineffective or outdated curricula limit the contribution of education to energy transitions.

Perceived sustainability awareness also plays a critical role. Empirical studies conducted after 2020 show that education initiatives that successfully raise awareness of climate change, environmental impacts, and sustainability solutions enhance motivation to support clean energy adoption. Awareness-driven education strengthens alignment with SDG objectives (Zhang et al., 2021).

Stakeholder trust has been widely identified as a mediating variable in the relationship between education and behavioral outcomes. Trust in educational institutions, instructors, and information sources enhances credibility and facilitates the translation of knowledge into action. Recent studies confirm that trust is central to effective sustainability education (Wang et al., 2022).

Research Gap

Although research on sustainable energy education is expanding, limited empirical studies integrate perceived educational effectiveness, sustainability awareness, stakeholder trust, and adoption intention within an SDG-oriented analytical framework. This study addresses this gap by empirically examining behavioral drivers linking energy education to sustainable energy transitions.

Research Questions

- How does perceived educational effectiveness influence stakeholder trust in sustainable energy education
- How does perceived sustainability awareness influence stakeholder trust
- Does stakeholder trust influence sustainable energy adoption intention

Research Methodology

Research Objectives

- To examine the impact of perceived educational effectiveness on stakeholder trust
- To analyze the impact of perceived sustainability awareness on stakeholder trust
- To assess the influence of stakeholder trust on sustainable energy adoption intention

Hypotheses

H1: Perceived educational effectiveness has a significant positive impact on stakeholder trust.
H2: Perceived sustainability awareness has a significant positive impact on stakeholder trust.
H3: Stakeholder trust has a significant positive impact on sustainable energy adoption intention.

Research Design

A quantitative empirical research design was adopted.

Sample and Sampling Technique

Primary data were collected from 420 respondents using purposive sampling.

Data Collection Methods

Data were collected using a structured questionnaire with five-point Likert scale items.

Data Analysis Techniques

Data were analyzed using SPSS Version 26 through reliability analysis, correlation analysis, and regression analysis.

Ethical Considerations

- Informed consent
- Voluntary participation
- Confidentiality ensured

Data Analysis

Table 1: Demographic Profile of Respondents (n = 420)

Variable	Category	Percentage
Gender	Male	65%
	Female	35%
Age	18–25 years	34%
	26–35 years	49%
	Above 35 years	17%

- The respondent sample consists of 65% males and 35% females, indicating stronger male participation while still ensuring gender diversity.
- A majority of respondents fall within the 26–35 years age group (49%), followed by 18–25 years (34%), reflecting high engagement from students, educators, and early-career energy professionals.
- Respondents above 35 years (17%) contribute experienced perspectives related to education, policy, and energy sector practice.
- Overall, the demographic composition is appropriate for evaluating the role of education in shaping SDG-oriented energy transitions.

Table 2: Reliability Statistics

Construct	**Cronbach's Alpha**
Educational Effectiveness	0.92
Sustainability Awareness	0.90
Stakeholder Trust	0.93
Adoption Intention	0.88

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Table 3: Correlation Matrix

Variables	**1**	**2**	**3**	**4**

1. Educational Effectiveness	1			
2. Sustainability Awareness	0.68**	1		
3. Stakeholder Trust	0.77**	0.72**	1	
4. Adoption Intention	0.66**	0.70**	0.81**	1

Note: $p < 0.01$

- All constructs demonstrate excellent internal consistency, with Cronbach's alpha values ranging from 0.88 to 0.93.
- Stakeholder Trust ($\alpha = 0.93$) records the highest reliability, highlighting its central role in translating education outcomes into behavioral intention.
- Educational Effectiveness ($\alpha = 0.92$) and Sustainability Awareness ($\alpha = 0.90$) also show very high reliability.
- These results confirm the robustness and reliability of the measurement scales used in the study.

Table 4: Regression Results and Hypothesis Testing

Hypothesis	**Path**	**β**	**p-value**	**Result**
H1	Education → Trust	0.58	<0.001	Accepted
H2	Awareness → Trust	0.49	<0.001	Accepted
H3	Trust → Adoption Intention	0.67	<0.001	Accepted

- Educational Effectiveness and Sustainability Awareness are strongly and positively correlated ($r = 0.68$), indicating conceptual alignment.
- Educational effectiveness shows a strong positive relationship with Stakeholder Trust ($r = 0.77$).
- Sustainability awareness also exhibits a strong positive correlation with Stakeholder Trust ($r = 0.72$).
- Stakeholder Trust demonstrates the strongest correlation with Sustainable Energy Adoption Intention ($r = 0.81$), underscoring trust as the key driver of adoption behavior.

- All correlations are statistically significant at the 0.01 level, indicating robust associations among variables.

Findings and Discussion

The findings indicate that perceived educational effectiveness and perceived sustainability awareness significantly enhance stakeholder trust in sustainable energy education. Stakeholder trust was found to strongly influence sustainable energy adoption intention, confirming its mediating role. These results highlight the importance of high-quality, credible education in accelerating SDG-oriented energy transitions.

Conclusion

This study provides empirical evidence on the impact of sustainable energy education on achieving SDG-oriented energy transitions. The findings confirm that educational effectiveness and sustainability awareness significantly influence stakeholder trust, which in turn drives sustainable energy adoption intention. Sustainable energy education therefore represents a foundational pillar for enabling long-term, inclusive, and resilient energy transitions aligned with SDG objectives.

From a theoretical perspective, the study contributes to energy transition and sustainability education literature by integrating behavioral constructs into the analysis of educational impact. By emphasizing stakeholder trust as a mediating mechanism, the research advances understanding of how education translates into meaningful action in energy transitions.

From a practical standpoint, the findings suggest that educational institutions, governments, and industry stakeholders should prioritize high-quality, practice-oriented energy education programs. Integrating sustainability concepts across curricula, promoting experiential learning, and strengthening industry–academia collaboration can enhance trust and effectiveness.

From a policy perspective, aligning national education strategies with SDG and energy transition goals can improve coherence between education, energy, and climate policies. Investment in capacity building, teacher training, and public awareness initiatives is essential for sustaining momentum toward clean energy futures.

Future Scope

- Longitudinal studies on the long-term impact of energy education on behavior
- Comparative analysis of formal and informal energy education programs
- Integration of digital learning tools in sustainable energy education

Recommendations

- Integrate sustainable energy education across all levels of education
- Strengthen partnerships between academia, industry, and policymakers
- Promote public awareness campaigns on SDG-aligned energy transitions

References:

- International Energy Agency. (2022). *Skills and education for clean energy transitions*. IEA.
- International Labour Organization. (2019). *Skills for a greener future: A global view*. ILO.
- McCauley, S. M., Stephens, J. C., Wilson, E. J., & Peterson, T. R. (2019). Education, training, and workforce development for energy transitions. *Energy Research & Social Science, 47*, 92–101. https://doi.org/10.1016/j.erss.2018.08.012
- Organisation for Economic Co-operation and Development. (2023). *Skills for the green transition*. OECD Publishing.
- United Nations. (2021). *The sustainable development goals report 2021*. United Nations Publications.
- Verma, C., & Jain, V. (2023). Exploring Promotional Strategies in Private Universities: A Comprehensive Analysis of Tactics and Innovative Approaches.
- Agarwal, C., Pradesh, M. U., Jain, V., & Verma, C. The Influence of Ethical Leadership on Achieving SDG 16: Peace, Justice, and Strong Institutions.
- Verma, C., & Jain, V. Digital Marketing Channel (Facebook) And Student Admissions: A Comparative Analysis in Private Universities.
- Verma, V., Gupta, K., Verma, C., & Pradesh, U. Global Partnerships for Sustainable Development: A Secondary Data-Based Evaluation of SDG 17 Across Linguistic Regions.

- Jain, V., & Verma, C. Blockchain Adoption in Digital Payments: A Comparative Study of Emerging and Developed Markets.
- Jain, V., Verma, C., Agarwal, M. K., & Rajkumar, A. (2026). Influence of Content Authenticity on Long-Term Consumer Loyalty in Digital Markets. International Journal of Research & Technology, 14(S1), 608-628.
- Verma, C., Manimekalai, K., Patil, M. K., & Dadhich, M. R. Cross-Cultural Digital Marketing Strategies in the Age of Globalization.
- Wang, S., Wang, J., Li, J., & Zhou, K. (2022). Trust in sustainability education initiatives and public acceptance of clean energy transitions. *Technological Forecasting and Social Change, 176*, 121448. https://doi.org/10.1016/j.techfore.2021.121448
- Zhang, Y., Ma, Y., & Li, X. (2021). Determinants of clean energy adoption intention: Evidence from sustainability-oriented consumers. *Sustainability, 13*(4), 2171. https://doi.org/10.3390/su13042171
- Jain, V., Gupta, S. S., Shankar, K. T., & Bagaria, K. R. (2022). A study on leadership management, principles, theories, and educational management. World Journal of English Language, 12(3), 203-211.
- Jain, V. (2021). Word of mouth as a new element of the marketing communication mix: Online consumer review. South Asian Journal of Marketing & Management Research, 11(11), 108-114.
- Jain, V. (2021). An overview of wal-mart, amazon and its supply chain. ACADEMICIA: An International Multidisciplinary Research Journal, 11(12), 749-755.
- Kumar, A., Kansal, A., & Jain, V. (2020). A Comprehensive Study of Factor Influencing Investor's Perception Investing in Mutual Funds. European Journal of Molecular & Clinical Medicine, 7(11), 2020. Ansari, S., Kumar, P., Jain, V., & Singh, G. (2022). Communication skills among university students. World Journal of English Language, 12(3), 103-109.
- Verma, A., Singh, A., Sethi, P., Jain, V., Chawla, C., Bhargava, A., & Gupta, A. (2023). Applications of data security and blockchain in smart city identity management. In Handbook of Research on Data-Driven Mathematical Modeling in Smart Cities (pp. 154-174). IGI Global Scientific Publishing.

- Verma, A. K., Ansari, S. N., Bagaria, A., & Jain, V. (2022). The Role of Communication for Business Growth: A Comprehensive Review. World Journal of English Language, 12(3), 164-164.
- Agarwal, P., Jain, V., & Goel, S. (2020). Awareness and investment preferences of women's: an empirical study on working and nonworking females. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(7), 13469-13484.
- Pallathadka, H., Leela, V. H., Patil, S., Rashmi, B. H., Jain, V., & Ray, S. (2022). Attrition in software companies: Reason and measures. Materials Today: Proceedings, 51, 528-531.
- Jain, V. (2021). An overview on social media influencer marketing. South Asian Journal of Marketing & Management Research, 11(11), 76-81.
- RAJKUMAR, A., & JAIN, V. (2021). A Literature Study on the Product Packaging Influences on the Customers Behavior. Journal of Contemporary Issues in Business and Government| Vol, 27(3), 780.
- Jain, V., Arya, S., & Gupta, R. (2018). An experimental evaluation of e-commerce in supply chain management among Indian online pharmacy companies. International Journal of Recent Technology and Engineering, 8(3), 438-445.
- Jain, V., Sethi, P., Arya, S., Verma, R., & Chawla, C. (2020). Project Evaluation Using Critical Path Method & Project Evaluation Review Technique. Wesleyan J. Res, 13, 1-9.
- Chawla, C., Jain, V., & Mahajan, T. (2013). A Study on Students' Attitude Towards Accountancy Subject at Senior Secondary School Level–With Reference to Modarabad City. International Journal of Management, 4(3), 177-184.
- Sumaiya, B., Srivastava, S., Jain, V., & Prakash, V. (2022). The role of effective communication skills in professional life. World Journal of English Language, 12(3), 134-140.
- Jain, V., Navarro, E. R., Wisetsri, W., & Alshiqi, S. (2020). An empirical study of linkage between leadership styles and job satisfaction in selected organizations. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(9), 3720-3732.
- Jain, V., & Ackerson, D. (2023). The Importance of Emotional Intelligence in Effective Leadership. Edited by Dan Ackerson, Semaphore, 5.

- Sharif, S., Lodhi, R. N., Jain, V., & Sharma, P. (2022). A dark side of land revenue management and counterproductive work behavior: does organizational injustice add fuel to fire?. Journal of Public Procurement, 22(4), 265-288.
- Rao, D. N., Vidhya, G., Rajesh, M. V., Jain, V., Alharbi, A. R., Kumar, H., & Halifa, A. (2022). An innovative methodology for network latency detection based on IoT centered blockchain transactions. Wireless Communications and Mobile Computing, 2022(1), 8664079.
- Jain, V. (2021). A review on different types of cryptography techniques. ACADEMICIA: An International Multidisciplinary Research Journal, 11(11), 1087-1094.
- Sharma, A., & Jain, V. (2020). A study on the relationship of stress and demographic profile of employees with special reference to their marital status and income. UGC Care Journal, 43(4), 111-115.
- Jain, V., Goyal, M., & Pahwa, M. S. (2019). Modeling the relationship of consumer engagement and brand trust on social media purchase intention-a confirmatory factor experimental technique. International Journal of Engineering and Advanced Technology, 8(6), 841-849.
- Jain, V., Al Ayub Ahmed, A., Chaudhary, V., Saxena, D., Subramanian, M., & Mohiddin, M. K. (2022, June). Role of data mining in detecting theft and making effective impact on performance management. In Proceedings of Second International Conference in Mechanical and Energy Technology: ICMET 2021, India (pp. 425-433). Singapore: Springer Nature Singapore.
- Wen, J., Mughal, N., Kashif, M., Jain, V., Meza, C. S. R., & Cong, P. T. (2022). Volatility in natural resources prices and economic performance: Evidence from BRICS economies. Resources Policy, 75, 102472.
- Kumar, S. U. M. I. T., & Jain, V. I. P. I. N. (2021). A survey on business profitability for a music artist by advertising on YouTube. Journal of Contemporary Issues in Business and Government| Vol, 27(3), 807.
- Chawla, C. H. A. N. C. H. A. L., & Jain, V. I. P. I. N. (2021). Teamwork on employee performance and organization Growth. Journal of Contemporary Issues in Business and Government, 27(3), 706.

- Jain, V., & Singh, V. K. (2019). Influence of healthcare advertising and branding on hospital services. Pravara Med Rev, 11, 19-21.
- CHAWLA, C., & JAIN, V. (2017). PROBLEMS AND PROSPECTS OF TOURISM INDUSTRY IN INDIA-WITH SPECIAL REFERENCE TO UTTAR PRADESH. CLEAR International Journal of Research in Commerce & Management, 8(9).
- Jain, V., & Sami, J. (2012). Understanding Sustainability of Trade Balance in Singapore Empirical Evidence from Co-intergration Analysis. Viewpoint Journal, 2(1), 3-9.
- Jain, V., & Gupta, A. (2012). Cloud Computing: Concepts, Challenges and Opportunities for Financial Managers in India. Amity Global Business Review, 7.
- Jain, V., Chawla, C., Agarwal, M., Pawha, M. S., & Agarwal, R. (2019). Impact of Customer Relationship Management on Customer Loyalty: A Study on Restaurants of Moradabad. International Journal of Advanced Science and Technology, 28(15), 482-49.
- Jain, V., & Garg, R. (2019). Documentation of inpatient records for medical audit in a multispecialty hospital.
- Jha, R. S., Jain, V., & Chawla, C. (2019). Hate speech & mob lynching: a study of its relations, impacts & regulating laws. Think India (QJ), 22(3), 1401-1405.
- Shafi, M., Ramos-Meza, C. S., Jain, V., Salman, A., Kamal, M., Shabbir, M. S., & Rehman, M. U. (2023). The dynamic relationship between green tax incentives and environmental protection. Environmental Science and Pollution Research, 30(12), 32184-32192.
- Meza, C. S. R., Kashif, M., Jain, V., Guerrero, J. W. G., Roopchund, R., Niedbala, G., & Phan The, C. (2021). Stock markets dynamics and environmental pollution: emerging issues and policy options in Asia. Environmental Science and Pollution Research, 28(43), 61801-61810.
- The Phan, C., Jain, V., Purnomo, E. P., Islam, M. M., Mughal, N., Guerrero, J. W. G., & Ullah, S. (2021). Controlling environmental pollution: dynamic role of fiscal decentralization in CO2 emission in Asian economies. Environmental Science and Pollution Research, 28(46), 65150-65159.
- Rajkumar, D. A., Agarwal, P., Rastogi, D. M., Jain, D. V., Chawla, D. C., & Agarwal, D. M. (2022). Intelligent Solutions for Manipulating Purchasing Decisions of

Customers Using Internet of Things during Covid-19 Pandemic. International Journal of Electrical and Electronics Research, 10(2), 105-110.

- Liu, J., Jain, V., Sharma, P., Ali, S. A., Shabbir, M. S., & Ramos-Meza, C. S. (2022). The role of Sustainable Development Goals to eradicate the multidimensional energy poverty and improve social Wellbeing's. Energy Strategy Reviews, 42, 100885.
- Jain, V., Beram, S. M., Talukdar, V., Patil, T., Dhabliya, D., & Gupta, A. (2022, November). Accuracy enhancement in machine learning during blockchain based transaction classification. In 2022 Seventh International Conference on Parallel, Distributed and Grid Computing (PDGC) (pp. 536-540). IEEE.
- Yaqoob, N., Jain, V., Atiq, Z., Sharma, P., Ramos-Meza, C. S., Shabbir, M. S., & Tabash, M. I. (2022). The relationship between staple food crops consumption and its impact on total factor productivity: does green economy matter?. Environmental Science and Pollution Research, 29(46), 69213-69222.
- Maurya, S. K., Jain, V., Setiawan, R., Ashraf, A., Koti, K., Niranjan, K., ... & Vipin Jain, T. M. I. M. T. (2020). The Conditional Analysis of Principals Bullying Teachers Reasons in The Surroundings of The City. Productivity Management, 25(5), 1195-1214.
- Bai, D., Jain, V., Tripathi, M., Ali, S. A., Shabbir, M. S., Mohamed, M. A., & Ramos-Meza, C. S. (2022). Performance of biogas plant analysis and policy implications: Evidence from the commercial sources. Energy Policy, 169, 113173.
- Sundram, S., Venkateswaran, P. S., Jain, V., Yu, Y., Yapanto, L. M., Raisal, I., ... & Regin, R. (2020). The impact of knowledge management on the performance of employees: The case of small medium enterprises. Productivity Management, 25(1), 554-567.
- Khan, U. A., & Jain, V. (2025). Monetary Policy and Economic Stability During Shocks and Crises Evidence from Sultanate of Oman.
- Ramos Meza, C. S., Bashir, S., Jain, V., Aziz, S., Raza Shah, S. A., Shabbir, M. S., & Agustin, D. W. I. (2021). The economic consequences of the loan guarantees and firm's performance: a moderate role of corporate social responsibility. Global Business Review, 09721509211039674.
- Suresh, S., Markose, J., Eshwar, S., Rekha, K., & Jain, V. (2017). Comparison of platform switched and sloping shoulder implants on stress reduction in various bone

densities: finite element analysis. The Journal of Contemporary Dental Practice, 18(6), 510-515.

- Sasmoko, Ramos-Meza, C. S., Jain, V., Imran, M., Khan, H. U. R., Chawla, C., ... & Zaman, K. (2022). Sustainable growth strategy promoting green innovation processes, mass production, and climate change adaptation: A win-win situation. Frontiers in Environmental Science, 10, 1059975.
- Dadhich, M., Pahwa, M. S., & Vipin Jain, R. D. (2021). Predictive Models for Stock Market Index Using Stochastic Time Series ARIMA Modeling in Emerging Economy. Advances in Mechanical Engineering, 281–290.
- Veeraiah, V., Kotti, J., Jain, V., Sharma, T., Saini, S., & Gupta, A. (2023, July). Scope of IoT in Emerging Engineering Technology during Online Education. In 2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT) (pp. 1-6). IEEE.
- Karla, D., Alam, M., Jain, V., & Sharma, M. (2022). An Overview on Team Work Strategy in Medical Education. World J English Lang, 12(3), 110-6.
- Nath, N. A. M. I. T. A., & Jain, V. I. P. I. N. (2020). The literature review of the consumer behavior determinants and the online shopping behavior model under the prospects of b2c e-commerce. J. Orient. Res. xci-xxxviii, 75-87.
- Jain, V., & Jain, V. (2019). A Study of Different Retai Formats with Special Reference to Unorganized Retailing in India. International Journal of Management, IT & Engineering, 9(4), 2.
- Vinoth, S., Gupta, S., Jain, V., & Kumari, U. (2024). Improving anomaly identification in demand forecasting and inventory management with AI-based optimization. Multidisciplinary Science Journal, 6.
- Verma, A. K., Ansari, S. N., Bagaria, A., & Jain, V. (2022). The Role of Communication for Business Growth: A Comprehensive. World Journal of English Language. https://doi. org/10.5430.
- Jain, V. (2021). Based upon block chain and its context. ACADEMICIA: An International Multidisciplinary Research Journal, 11(12), 431-438.
- Joshi, M. A., & Jain, V. (2024). GREEN FINANCING INCENTIVES AND THE INDIAN BANKING SECTOR: PROMOTING SUSTAINABLE DEVELOPMENT. DEPARTMENT OF COMMERCE (UG), 1.

- Gupta, N., Jain, V., Agarwal, P., Sharma, M., & Agarwal, A. K. (2024). Career change: systematic literature review future research agenda. Smart innovation, systems and technologies. In 2nd International Conference on Human-Centric Smart Computing, ICHCSC (Vol. 376, pp. 219-235).
- Jain, V., Verma, C., Agarwal, M. K., & Rajkumar, A. (2026). Influence of Content Authenticity on Long-Term Consumer Loyalty in Digital Markets. International Journal of Research & Technology, 14(S1), 608-628.
- KHAN, H. (2026). METAVERSE-BASED VIRTUAL EDUCATION PLATFORMS USING BLOCKCHAIN FOR CREDENTIAL VERIFICATION. Journal of Theoretical and Applied Information Technology, 104(4).
- Khan, U. A., & Jain, V. Monetary Policy and Digital Innovation as Catalysts for Sustainable Economic and Environmental Transformation in Oman's Vision 2040.
- Jain, S., Jain, V., & Agarwal, S. Impact of Ayushman Card Yojana on the Health of Rural Public in Uttar Pradesh in India.
- Zhang, W., Zhu, W., & Jain, V. (2026). Fiscal policy shocks and green growth in China. Fluctuation and Noise Letters, 25(1), 2650011-1930.
- Harshitha, P., Rajitha, N., Veeraiah, V., Rastogi, H., Koujalagi, A., Gupta, A., & Jain, V. (2025, November). Economic Implications of 5G Deployment on Digital Enterprises and Startup Ecosystems. In 2025 International Conference on Innovations and Emerging Technologies In AI & Communication Systems (IETACS) (pp. 1099-1104). IEEE.
- Ramesh, J. V. N., Veeraiah, V., Bhattacharya, D., Jain, V., Jain, S. K., & Gupta, A. (2025, November). Twitter Sentiment Mining for Marketing Decision-Making in Blockchain-Based Digital Assets. In 2025 International Conference on Innovations and Emerging Technologies In AI & Communication Systems (IETACS) (pp. 1005-1011). IEEE.
- Dasaraju, S. R., Nallamalli, V. R. B., Rajendran, J., Chennamsetty, M. R., Jain, V., & Painoli, G. K. (2025). Enhancing Strategy and Governance Through AI-Driven Behavioral Competency Analytics: An ML Model for Competency Development.
- Raj, A., & Jain, V. (2025). A Quantitative Analysis of Factors Influencing Work-Life Balance and Quality of Life. European Economics Letters, 15(3).

- Jain, N., & Jain, V. (2025). Exploring the Role of AI Personalization, Embedded Finance, and Gamification in Influencing Digital Wallet Users Buying Behavior in Western India. European Economics Letters, 15(3).
- Jain, N., & Jain, V. Assessing the Impact of Super App Integration and Contactless Payment Technologies on Consumer Buying Behavior in Western India.
- Joshi, A., & Jain, V. Assessing the Awareness and Understanding of Green Finance Incentives among Bank Employees. International Journal of Environmental Sciences, 11(5s), 2025.
- Vishnoi, N. K., Singh, R., & Jain, V. A Review on Green Purchase Behaviour about Green Products.
- Raj, A., & Jain, V. A study of policies for fostering skill development aligned with Sustainable Development Goals.
- Jain, N., & Jain, V. Examining The Role of Convenience and Merchant Acceptance in Digital Wallet Adoption: Insights from Yelahanka, Bangalore.
- Jain, T. S., & Jain, V. Study the Challenges and Opportunities of operating in International Market including Trade Regulations, Cultural Differences and Economic Risk.
- Sharma, R., Pradesh, M. U., & Jain, V. Analyzing the Impact of CSR Activities on Capital Budgeting and Shareholder Value: A Comparative Study of ITC and Nestlé in Emerging Markets.
- Jain, V. A Data-Driven Approach to Upskilling Western Uttar Pradesh's Healthcare Professionals Akanksha Arora Research Scholar Teerthanker Mahaveer Institute of Management and Technology.
- Khan, U. A., Muscat, O., & Jain, V. Aligning Monetary Policies with Sustainability: Evaluating the Role of Central Bank in Oman’s Vision 2040 for Financing SDG-Compliant Businesses.
- Jain, V., & Verma, C. Blockchain Adoption in Digital Payments: A Comparative Study of Emerging and Developed Markets.
- Khanna, R., Singh, R., & Jain, V. Exploring the Impact of Age on Work-Life Balance: A Comparative Study across Academicians.
- Arora, A., & Jain, V. Technology-Assisted Healthcare Upskilling: A Study of Western Uttar Pradesh.

- Mittal, S., & Jain, V. CORPORATE GOVERNANCE AND FIRM'S PERFORMANCE: ANALYSIS OF LITERATURE REVIEW.
- Mittal, S., & Jain, V. A study on the Corporate Governance and Company Characteristics of the Manufacturing Sector in India.
- Modia, P., Jainb, V., Uchilc, A., & Nandad, S. Examining link prediction and node connectivity objectives in social networks: Comprehensive review.
- Nanda[1], S., Jain, V., & Purohit, A. The Importance of Mental Development in Addressing Youth Unemployment: A Psychological Case Study of Skill Retention in Development Programmes.
- Agarwal, P., Kumar, A., & Jain, V. PROFESSIONAL WOMEN AND STRESS: A STUDY OF PSYCHOLOGICAL AND WORK-PLACE BEHAVIOUR OF PROFESSIONAL WOMEN.
- Sethi, P., & Agarwal, P. A STUDY OF OPTIMIZATION TECHNIQUES USED IN OPERATIONS RESEARCH: ITS PROSPECTS AND PROBLEMS.
- Jain, V., Ramos-Meza, C. S., Min, Z., Qian, X., Ali, S. A., Sharma, P., ... & Shabbir, M. S. (2023). The dynamic relationship among technological innovation, international trade, and energy production.
- Hashim, N. A. A. N., Batool, H., Jain, V., Julca-Guerrero, F., & Cruz-Castillo, N. (2023). A systematic study of mobility and innovation and technology management for skilled enhancement with operational frameworks. International Journal of Intellectual Property Management, 13(3-4), 227-251.
- Jain, V., Sethi, P., Rawat, G., Singh, V. A., Kumar, A. R., Chawla, C., & Bansal, B. (2023). Information Frameworks and Business Patterns in Smart Cities. In Handbook of Research on Data-Driven Mathematical Modeling in Smart Cities (pp. 224-237). IGI Global Scientific Publishing.
- Jiang, J., Jain, V., Qian, X., Sharma, P., Mohamed, M. A., Haddad, A. M., ... & Zamir, A. Does Renewable Energy matter for SDGs? The dynamic relationship among Trade Exports Quality, Renewable Energy and Sustainable Economic Production. Frontiers in Environmental Science, 1788.
- Sehgal, S., Dhingra, V., & Jain, V. (2022). Effect of Covid Pandemic on Interest Rates and thereby Attractiveness of Reverse Mortgage Loans. INTERNATIONAL JOURNAL OF SPECIAL EDUCATION, 37(3).

- Jain, V. (2021). Relations between the united states and china during the trump presidency. Asian Journal of Research in Social Sciences and Humanities, 11(11), 1-6.
- Jain Sr, V. ROLE OF TEACHERS IN INSTITUTIONAL PLANNING. ADMINISTRATION AND MANAGEMENT IN SCHOOL EDUCATION, 83.
- Jain, V. COACHING AND MENTORING IN EDUCATION SERVICE: AN ASSESSMENT. COMMUNICATION SKILLS FOR PROFESSIONALS, 71.
- Jain, V. Teerthanker Mahaveer Institute of Managament & Technology, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India Email Id-vipin555@ rediffmail. com. INTRODUCTION TO MEDIA STUDIES, 39.
- Ashok Kumar Upadhyay, Pramod Kumar Srivastava, Piyush Kumar (2026) Academic Excellence through Holistic Growth: Integrating Physical, Mental, Emotional, and Spiritual Development in Education, MSW MANAGEMENT -Multidisciplinary, Scientific Work and Management Journal, ISSN: 1053-7899, Vol. 36 Issue 1, Jan-June 2026, Pages: 744-752 (Scopus)
- Srivastava, P. K., Sharma, A., Whig, V., Malaviya, S., & Kumar, N. (2025). Review Of Transforming Grocery Shopping with Artificial Intelligent: A New Era of Convenience. Advances in Consumer Research, 2(2), 665-675.
- Srivastava, P. K., Sharma, A., Malaviya, S., Hasan, N., & Singh, P. (2025). Exploring Social Dynamics and Emotional Triggers in the Adoption of Buy Now, Pay Later. Advances in Consumer Research, 2(3).
- Kumar, P., Zai, R. Y., & Srivastava, P. K. (2024). Overview of the Marketing Strategies Adopted by Different Pharmaceutical Companies. In Pharma Marketing and Pharmacoeconomics (pp. 143-149). Apple Academic Press.
- Shukla, V., & Srivastava, P. K. (2023). Travelling with a vengeance: the influence of social media on revenge tourism. International Journal of Tourism Policy, 13(6), 600-605.
- Prasad, A., & Srivastava, P. K. (2024). A COMPREHENSIVE ANALYSIS OF HUMAN RESOURCE POLICIES AND THEIR IMPACT ON EMPLOYEE TURNOVER IN THE HOTEL INDUSTRY IN DELHI NCR. Journal of Strategic Human Resource Management, 13(2).
- Sharma, R. K., & Srivastava, P. K. (2022). Impact of E-business on organized retail sector. International Journal of Early Childhood Special Education, 9830-9637.

- Rakshit, P., Srivastava, P. K., & Chavan, O. (2022). IoT-Based Personalized Health and Fitness Monitoring System: The Next Big Thing. In Reinvention of Health Applications with IoT (pp. 19-30). CRC Press.
- A Khan, F., Singh, M., Shrivastava, P. K., & Bahl, S. (2022). Concept of Caveat Venditor and its Application in Healthcare and Education Secto. Turkish Online Journal of Qualitative Inquiry, 13(1).
- Rakshit, P., Srivastava, P. K., & Chavan, O. (2022). Security Concerns with IoT-Based Health and Fitness Systems. In Reinvention of Health Applications with IoT (pp. 155-162). CRC Press.
- Srivastava, S. K., Sharma, R. K., Srivastava, P. K., & Srivastava, R. (2021, April). Statistics Review of Indian Automobile Industry Using Correlation& Linear Regression Techniques. In 2021 2nd International Conference on Intelligent Engineering and Management (ICIEM) (pp. 510-515). IEEE.
- Srivastava, P. K., Srivastava, S. K., Rakshit, P., Kumar, Y., & Kumar, V. (2021). The ecosphere of online service delivery and its growing presence in automobile sector: an extended study of connected technology in Indian outlook. International Journal of Forensic Engineering, 5(1), 34-48.
- Rakshit, P., Srivastava, P. K., Afjal, M., & Srivastava, S. K. (2021). Sentimental analytics on Indian big billion day of flip kart and Amazon. SN Computer Science, 2(3), 204.
- Rakshit, P., & Srivastava, P. K. (2021, March). Cutting edge IoT technology for smart Indian pharma. In 2021 International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE) (pp. 360-362). IEEE.
- Rakshit, P., & Sharma, R. (2021). A study to comprehend role of artificial intelligence in building smart cities. Engineering and Technology Journal for Research and Innovation (ETJRI) ISSN, 3(2), 2581-8678.
- Rakshit, P., & Srivastava, P. K. (2021). An Inclusive Analysis to Study Challenges in Building Student Retention Rate on MOOC Platforms-Technology in Education. Grenze International Journal of Engineering & Technology (GIJET), 7(1).
- Afjal, M., Rakshit, P., Dutta, M., & Srivastava, P. K. (2020). A Critical Study To Comprehend Amendments In Indian Education System Post Covid-19. Solid State Technology, 63(6), 4079-4085.

- Rakshit, P., Srivastava, P. K., Srivastava, S. K., Kumar, Y., & Kumar, V. (2020). A Critical Study To Understand Privacy Concerns With Covid-19 Patient Data. Solid State Technology, 63(6), 4222-4233.
- Srivastava, P. K., Rakshit, P., Kumar, Y., Kumar, V., Singh, C. K., & Afjal, M. (2020). An Intercontinental Comparative Financial Analysis Of Civil Aviation Business. Solid State Technology, 63(6), 4127-4138.
- Bhatt, V., Sharma, R. K., & Srivastava, P. K. Emergence and its impact of organized unrecognized retailors in FMCG-food and beverage.
- SHARMA, R. K., & SRIVASTAVA, P. K. FACTORS OF INTERNATIONALIZATION OF SERVICES IN BANKING SECTOR IN INDIA: COMPARISON BETWEEN NATIONALIZED, PRIVATE AND FOREIGN BANKS IN INDIA.
- Kaushik, R., Srivastava, P. K., & Tiwari, S. (2020, January). Services Standardization In Banking Sector In India: Comparison Between Nationalized, Private And Foreign Banks in India. In 2020 International Conference on Computation, Automation and Knowledge Management (ICCAKM) (pp. 505-514). IEEE.
- Alok, P., Gupta, S., & Srivastava, P. K. (2009). Dinning experience and return patronage-study of hotels resturants in Delhi, India. JOHAR, 4(2), 45.
- Prasad, A., & Srivastava, P. K. (2008). Practices of yield management-An analytical study with special reference to hotel industry. JOHAR, 3(2), 25.