

Determinant Factors for the Development of Rural Entrepreneurship

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ABSTRACT

Determinant factors for rural entrepreneurship encompass economic, social, environmental, and institutional elements that influence entrepreneurial activities in rural areas. Economic factors include access to financial and non-financial support, infrastructure, and market access. Social dynamics, such as community networks and trust among stakeholders, contribute significantly to rural entrepreneurship development. Environmental considerations play a critical role, with sustainable practices and ecopreneurship emerging as important avenues for rural development. Policy and institutional factors, including government support and collaborative approaches, shape the operational environment for rural businesses. Challenges such as inadequate infrastructure, economic precarity, and limited networking opportunities hinder rural entrepreneurship growth. Case studies from rural India highlight the importance of user innovation in addressing local challenges. Fostering rural entrepreneurship requires a holistic approach that enhances economic vitality, social cohesion, and environmental sustainability, contributing to local economic development and addressing broader challenges like unemployment and poverty.

Keywords: entrepreneurship, rural development, social, economy.

INTRODUCTION

Encompass a variety of economic, social, environmental, and institutional elements that collectively influence entrepreneurial activities in rural areas. Notably, the promotion of rural entrepreneurship is critical for addressing significant challenges such as high unemployment, poverty, and economic stagnation that are prevalent in these regions. By fostering innovation and creating new market opportunities, rural entrepreneurship can play a transformative role in revitalizing local economies and improving the quality of life for residents. Economic factors, such as access to financial and non-financial support, are essential for nurturing rural entrepreneurship. Government initiatives aimed at providing financial aid and establishing innovation hubs have proven effective in empowering rural firms, as seen in countries like South Africa, China, and South Korea.[1][2] However, entrepreneurs often face challenges related to inadequate infrastructure, energy supply, and market access, which can hinder their ability to thrive. Additionally, emerging agricultural subjects and micro, small, and medium-sized enterprises (MSMEs) are pivotal in enhancing productivity and sustainability within rural economies, emphasizing the importance of a conducive economic environment.[1] [2][3] Social dynamics, including community networks and trust among local stakeholders, significantly contribute to the development of rural entrepreneurship. Strong social capital facilitates collaboration and resource sharing, allowing entrepreneurs to access vital support systems and networks that foster innovation and resilience.[4][5][6] Moreover, stakeholder inclusion and a balanced socio-economic orientation are crucial for ensuring that entrepreneurial activities align with the broader needs of rural communities, promoting both economic growth and social responsibility.[6] Environmental considerations also play a critical role in shaping rural entrepreneurship. Sustainable practices are increasingly recognized as necessary for mitigating resource depletion and biodiversity loss, making ecopreneurship—a model focusing on environmentally conscious business practices—an important avenue for rural development.[7][8] Nonetheless, the challenges of achieving sustainable entrepreneurship must be navigated carefully, as poorly managed economic development can lead to adverse social

and environmental impacts, further complicating the landscape for rural entrepreneurs.[8][9] In summary, understanding the determinant factors for rural entrepreneurship is vital for creating supportive frameworks that enhance economic vitality, social cohesion, and environmental sustainability in rural areas, thereby fostering a more resilient and inclusive entrepreneurial ecosystem.

Economic Factors Role of New Agricultural Subjects New agricultural subjects have emerged as significant contributors to enhancing agricultural production efficiency and improving the agricultural industry's structure and quality. Their involvement aligns with the rural revitalization strategy, where effective organization, management, and collaboration capabilities of these subjects play a crucial role in developing the agricultural industry chain. This transformation has positioned new agricultural subjects as a driving force behind rural and agricultural development, facilitating the high-quality evolution of agriculture and rural areas [1]. Financial and Non-Financial Support in South Africa, the government has implemented various financial and non-financial measures to support rural firms. This intervention is deemed necessary for fostering entrepreneurship and innovation, enabling rural entrepreneurs to access new markets. Drawing from the experiences of other nations, such as China, Taiwan, and South Korea, successful policies that encouraged rural communities to engage in entrepreneurship and innovation were pivotal in transforming their economies and reducing poverty levels [2]. This framework is essential for achieving Sustainable Development Goals (SDGs) 1 (No Poverty), 8 (Decent Work and Economic Growth), and 9 (Industry, Innovation, and Infrastructure).

1.1 Entrepreneurship as an Economic Catalyst

Entrepreneurship serves as a vital mechanism for addressing economic challenges, including high unemployment and poverty rates prevalent in rural areas. Scholars argue that stimulating and nurturing entrepreneurship can effectively combat these issues, thus enhancing regional and rural economic development. The recognition of rural areas as reservoirs of natural resources further underscores their potential role in contributing to regional economies [2]. However, a conducive environment, characterized by supportive laws and systems, is critical for entrepreneurship to flourish [2].

1.2 Challenges of Energy Supply

The reliability of energy supply is another economic factor impacting rural entrepreneurship. For instance, South Africa's power utility, Eskom, initiated load shedding to manage the energy crisis, affecting firms' operations and increasing operational costs. Businesses often face additional expenses related to alternative energy sources due to unstable electricity supply, which can lead to business failures and hinder economic growth [2]. Such challenges emphasize the need for sustainable energy solutions to support entrepreneurship in rural settings.

SOCIAL FACTORS

2.1 Overview

Social factors play a critical role in the development and sustainability of rural entrepreneurship. The interactions among community members, local networks, and social capital are fundamental in fostering an environment conducive to entrepreneurial activities.

2.2 Community Networks

In rural areas, existing community networks are pivotal for supporting entrepreneurial initiatives. These networks encourage knowledge sharing and resource mobilization, as seen in the case of Potosi, Wisconsin, where community members revived a historical landmark by leveraging their social connections and diverse funding sources [4]. Such networks act as a "social glue," facilitating collaboration and joint action among stakeholders [4].

2.3 Trust and Collaboration

Building trust among community members is essential for successful collaboration. A shared mission or common concern can motivate stakeholders to work together towards a mutual goal. The establishment of trust allows for open communication, fostering relationships that are necessary for creating a shared vision and commitment to entrepreneurial goals [4][5]. Without strong interpersonal relationships, the likelihood of achieving collaborative success diminishes.

2.4 Social Capital

The concept of social capital is integral to understanding rural entrepreneurship. It encompasses the networks, relationships, and norms that facilitate cooperation among individuals within a community. High levels of social capital can lead to better information flow, increased support for entrepreneurs, and a greater likelihood of collective action [6]. Additionally, effective use of social capital can lead to enhanced quality of life and socio-economic development within rural areas [6].

2.5 Stakeholder Inclusion

Inclusion of diverse stakeholders is crucial for addressing the unique challenges faced by rural communities. Engaging stakeholders early in the entrepreneurial process ensures that the values and needs of the community are recognized. This inclusive approach enhances the potential for successful collaborative efforts, as stakeholders can draw upon their individual strengths to contribute to the collective entrepreneurial ecosystem [4].

2.6 Socio-Economic Orientation

The socio-economic orientation of entrepreneurial activities directly influences regional development. A balance between economic growth and social responsibility is vital for sustainable entrepreneurship in rural areas. This orientation encompasses the ability to adapt to socio-economic changes, facilitate local business activities, and promote social capital development [6]. By focusing on both economic and social dimensions, rural entrepreneurs can contribute to the overall well-being of their communities.

2.7 Institutional Environment

The formation of a robust institutional environment is crucial for entrepreneurship development. Institutional determinants, which include market institutions, state regulation, and property rights, are pivotal in shaping the entrepreneurial landscape [6]. The role of regulatory activities, supported by modern market tools and government interventions, has become increasingly important. Such interventions encompass financial support mechanisms, legal protection, educational resources, and infrastructural and informational assistance, all aimed at bolstering regional entrepreneurial formations [6].

2.8 Government Support

Government support—both financial and non-financial—is vital for stimulating entrepreneurship, particularly in rural areas. Evidence suggests that effective state intervention can assist rural entrepreneurs in accessing new markets and resources [2]. The establishment of innovation hubs, clusters, and incubation centers can serve as catalysts for nurturing entrepreneurship and innovation within these communities [2]. Additionally, targeted and differentiated support systems are necessary to create a favorable environment that promotes the establishment of new agricultural business entities [1].

2.9 Collaborative Approaches

Partnerships and collaborative efforts among various stakeholders are essential for enhancing the effectiveness of economic development strategies. Rural economic development initiatives should be tailored to the unique strengths and challenges of individual regions. The creation of rural hubs can facilitate collaboration and resource sharing, thereby fostering a cohesive entrepreneurial ecosystem [11]. Evaluating existing programs and initiatives can help policymakers identify gaps and leverage successful strategies to further support entrepreneurship in rural areas [11][12].

CHALLENGES AND BARRIERS

The development of rural entrepreneurship is fraught with various challenges and barriers that can hinder growth and sustainability. These obstacles can be categorized into several key areas.

3.1 Infrastructure Limitations

One of the most significant barriers to rural entrepreneurship is inadequate infrastructure. Good transport systems and telecommunications are essential for the operation of businesses, yet many rural areas lack these basic services. Entrepreneurs are less likely to establish themselves in rural communities if they perceive that their business will not have access to appropriate technology and infrastructure [5]. This challenge is compounded by the small population

sizes in many rural areas, which can make it difficult to justify the location of essential support services, such as high-speed internet [5].

3.2 Economic Precarity

Rural areas have faced precarious economic futures even before the COVID-19 pandemic. Many communities have not recovered employment levels from prior economic downturns and struggle with high poverty rates, depopulation, and insufficient infrastructure necessary for economic growth [10]. The pandemic has exacerbated these issues, particularly affecting small businesses in leisure, hospitality, and recreation sectors [10]

3.3 Absence of Networking Opportunities

A critical element for entrepreneurial success is the ability to network and learn from others facing similar challenges. The absence of other entrepreneurs in rural areas makes it difficult to build these vital connections. This lack of networking can limit entrepreneurs' access to resources and support, as well as diminish their morale in environments where entrepreneurial activity is not widely valued [5].

3.4 Environmental and Social Impact

The economic development of rural regions often entails unwanted social and environmental consequences, including resource depletion and loss of biodiversity [8].

As a result, there is a pressing need to balance economic growth with sustainability and environmental protection. Without this balance, the potential for sustainable entrepreneurship may be jeopardized, further complicating the challenges faced by rural entrepreneurs [8].

3.5 Leadership and Collaboration

The absence of strong leadership can impede collaborative efforts essential for rural revitalization. Collaborators across various sectors have noted the importance of key individuals who can mobilize others and foster networks [4]. Effective collaboration requires the identification of shared problems and goals among stakeholders, which is often lacking in rural communities [4]. Without this collaboration, the potential for developing social assets that enhance entrepreneurial initiatives remains limited. By addressing these challenges and barriers, stakeholders can create a more supportive environment for rural entrepreneurship, ultimately leading to sustainable economic growth in these communities.

CASE STUDIES

4.1 User Innovation in Rural India

A significant aspect of rural entrepreneurship is exemplified through user innovation, particularly in rural India, where 70% of the population resides.[13] This section presents findings from various case studies that highlight the innovative solutions developed by rural entrepreneurs facing economic hardships.

4.2 Overview of Case Studies

The case studies focus on five rural user innovators: Patel, Jagani, Dahiya, Prajapati, and Kamboj, who innovated to address local challenges with low-cost solutions. Each innovator faced professional dissatisfaction and financial constraints, motivating them to automate labor-intensive processes and create affordable alternatives to existing products.[1] For example, Dahiya developed a biofuel solution in response to the high cost of diesel, while Prajapati invented the mitticool fridge as an affordable alternative to conventional refrigerators.[13]

4.3 Support and Impact

These innovators received assistance from premier educational institutions in India through the National Innovation Foundation (NIF), allowing them to enhance their product designs and develop commercially viable prototypes. As a result, they expanded their customer base, reaching markets beyond their local areas. For instance, Dahiya received inquiries for his biomass gasifier from several international markets, including Africa and Europe, while Kamboj exported his multipurpose processing machine to Kenya and Ethiopia.[13]

4.4 Factors Influencing Success

The success of these rural entrepreneurs can be attributed to several critical factors identified through qualitative research. Key determinants include access to capital, industry experience, marketing skills, and support from educational institutions. This support is particularly vital for enabling rural entrepreneurs to improve their products and effectively compete in both local and international markets.[1]

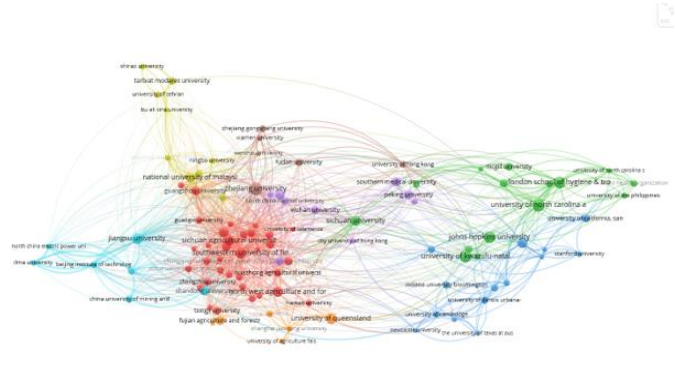


Figure 1: Network Visualization for Publications from Different Journals

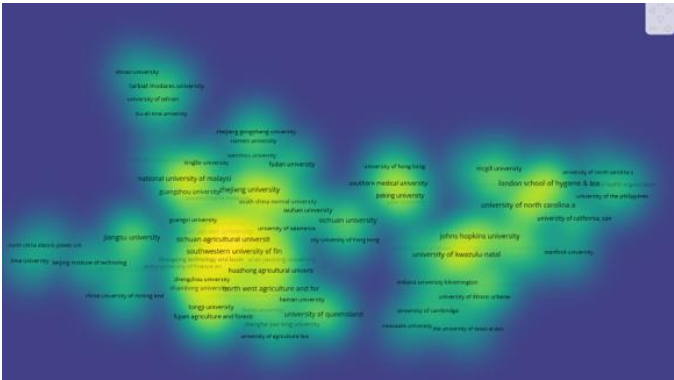


Figure 2: Intensity for Publications from Different Journals

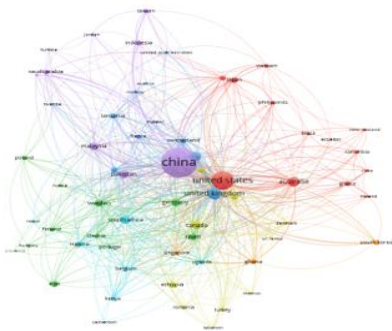


Figure 3: Network Visualization for Publications from Different Author & Country

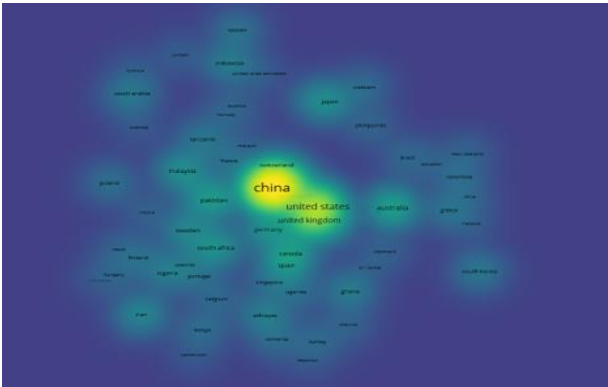


Figure 4: Network Visualization for Publications from Different Author & Country

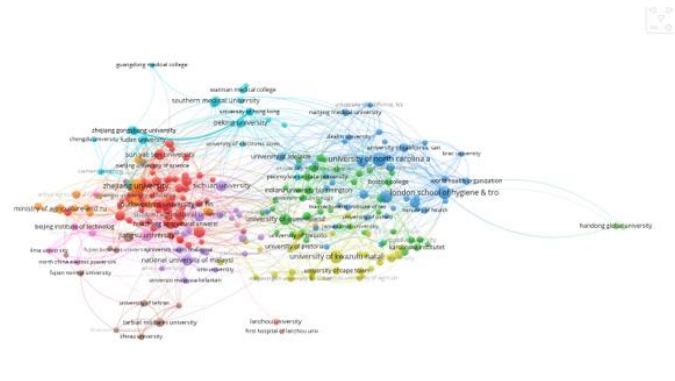


Figure 5: Network Visualization for Publications from Different Bibliographic Organization

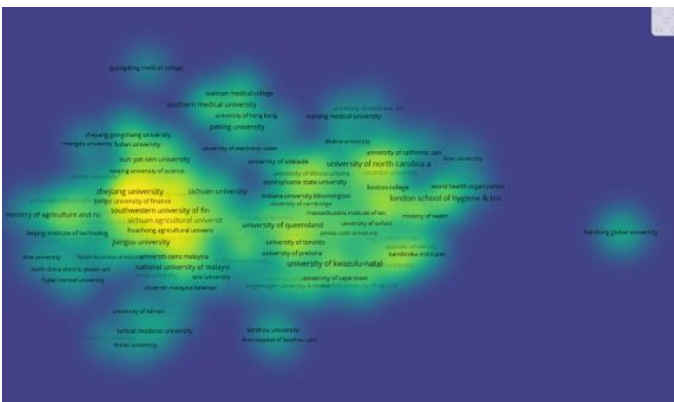


Figure 6: Intensity for Publications from Different Bibliographic Organization

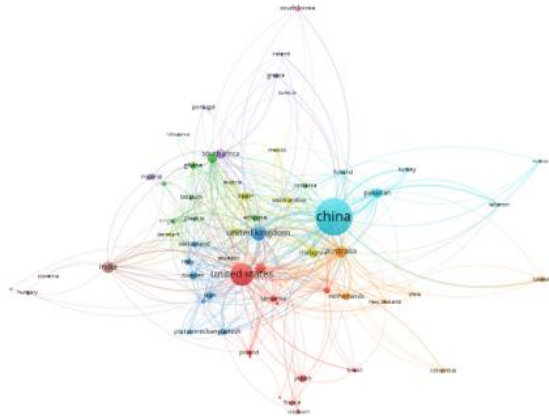


Figure 7 Network Visualization for Publications from Different Citation & Country

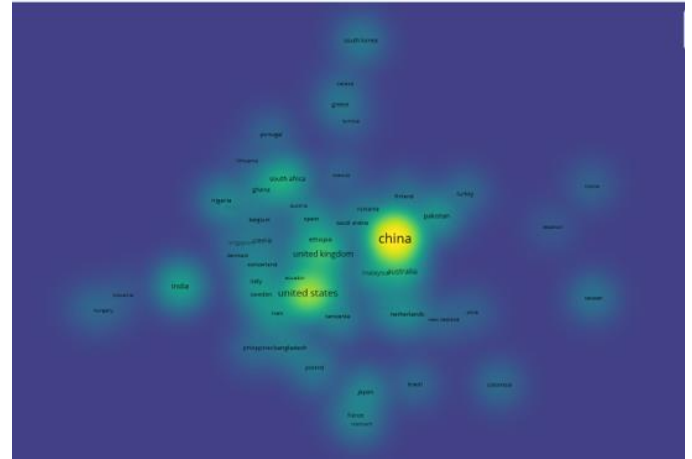


Figure 8 Network Visualization for Publications from Different Citation & Country

CONCLUSION

Fostering rural entrepreneurship requires a holistic approach that addresses economic, social, environmental, and institutional factors. By creating supportive frameworks that enhance economic vitality, social cohesion, and environmental sustainability, it is possible to cultivate a more resilient and inclusive entrepreneurial ecosystem in rural areas. This approach not only contributes to local economic development but also plays a crucial role in addressing broader challenges such as unemployment, poverty, and environmental degradation.

REFERENCES

- [1] Mulibana, L., & Tshikovhi, N. (2024). Rural Entrepreneurship and Innovation in BRICS Economies: Secondary Evidence from Rural Areas in South Africa. *Sustainability*, 16(6), 2408. <https://doi.org/10.3390/su16062408>
- [2] Grilo, R., & Moreira, A. C. (2022). The social as the heart of social innovation and social entrepreneurship: An emerging area or an old crossroads? *International Journal of Innovation Studies*, 6(2), 53–66. <https://doi.org/10.1016/j.ijis.2022.03.001>
- [3] Sahrakorpi, T., & Bandi, V. (2021). Empowerment or employment? Uncovering the paradoxes of social entrepreneurship for women via Husk Power Systems in rural North India. *Energy Research & Social Science*, 79, 102153. <https://doi.org/10.1016/j.erss.2021.102153>
- [4] Ergin, S. M., Trusevich, E. V., Cherutova, M. I., & Kopaenko, I. V. (2021). Socio-Economic determinants of changes in the regional entrepreneurship environment development. *the European Proceedings of Social & Behavioral Sciences*. <https://doi.org/10.15405/epsbs.2021.09.02.31>
- [5] Mario Schulzke, 26 Green Entrepreneurs Who Are Helping Our Environment, 2012
- [6] Silva, F. M., Sousa, C., & Albuquerque, H. (2022). Analytical model for the development strategy of a Low-Density territory: the Montesinho Natural Park. *Sustainability*, 14(7), 4373. <https://doi.org/10.3390/su14074373>
- [7] Rodríguez-García, M., Guijarro-García, M., & Carrilero-Castillo, A. (2019). An overview of ecopreneurship, Eco-Innovation, and the ecological sector. *Sustainability*, 11(10), 2909. <https://doi.org/10.3390/su11102909>
- [8] Issa, H. A., Thai, M. T. T., & Nguyen, H. (2024). A systematic mapping of social entrepreneurship education: A call for increased collaboration, ethics, and research frameworks. *The International Journal of Management Education*, 22(3), 101025. <https://doi.org/10.1016/j.ijme.2024.101025>
- [9] Mari, M., Poggesi, S., Abatecola, G., & Essers, C. (2024). Women entrepreneurs and innovation: Retrospect and prospect. *Journal of Innovation & Knowledge*, 9(3), 100519. <https://doi.org/10.1016/j.jik.2024.100519>
- [10] Alka, T., Sreenivasan, A., & Suresh, M. (2024). Seeds of Change: Mapping the Landscape of precision farming technology adoption among agricultural entrepreneurs. *Journal of the Saudi Society of Agricultural Sciences*. <https://doi.org/10.1016/j.jssas.2024.09.001>
- [11] Yadav, V., & Goyal, P. (2015). User innovation and entrepreneurship: case studies from rural India. *Journal of Innovation and Entrepreneurship*, 4(1). <https://doi.org/10.1186/s13731-015-0018-4> Maniyar KG, Ingole DS.

- Multi response optimization of EDM process parameters for aluminium hybrid composites by GRA. *Mater Today Proc.* 2018; 5:1983643. <https://doi.org/10.1016/j.matpr.2018.06.347>
- [12] Maniyar KG, Ingole DS. Investigation of EDM process parameters for hybrid metal matrix composites. *IOP Conf Ser Mater Sci Eng.* 2018; 377:012204. <https://doi.org/10.1088/1757-899X/377/1/012204>
- [13] Maniyar KG, Ingole DS. Mathematical modeling and optimization of EDM process parameters for aluminium hybrid composites. *Mater Today Proc.* 2018; 5:27700-9. <https://doi.org/10.1016/j.matpr.2018.10.004>
- [14] Maniyar KG, Ingole DS. Influence of EDM control factors for aluminium hybrid Composites. *Lect Notes Multidiscipl Indus Eng.* 2018; 275-84. https://doi.org/10.1007/978-3-319-76276-0_27
- [15] Maniyar KG. An experimental analysis of aluminium hybrid metal matrix composites, *Mater Today Proc.* 2024. <https://doi.org/10.1016/j.matpr.2024.01.021>
- [16] Maniyar KG, Marode RV, Chikalthankar SB. Optimization of EDM process parameters on MRR and TWR of Tungsten Carbide by Taguchi Method. *Int J Eng Adv Technol.* 2016; 5:112-16. <https://doi.org/10.1016/j.matpr.2024.01.021>
- [17] Maniyar KG. Analysis of EDM process parameters on material removal rate of WC. *2nd Nat Conf Recent Inno Sci Eng.* 2017; 5(9):37-9.
- [18] Maniyar KG, Agrawal SK, Ingole DS. Optimization of multiple performance characteristics in EDM: A critical literature review. *Int J Innov Technol Explor Eng.* 2016; 5(10):27-33.
- [19] Maniyar KG, Deore HV. Design and testing of carbon fiber composite material with comparative analysis. *Int Res J Eng Tech.* 2020; 7(8):1120-2.
- [20] Maniyar KG, Ingole DS. Current research development in machining of hybrid metal matrix composites: A review. *Int J Recent Innov Trends Comput Commun.* 2016; 4(7):150-4.
- [21] Pallavi Abhinandan Jadhav, Kamalkishor Maniyar, Evaluation and characterization of aluminum silicon carbide Metal Matrix Composites. *AIP Conf Proc.* 2024. <https://doi.org/10.1063/5.0227945>
- [22] Maniyar K, Jadhav P, Biradar R, Gawande J. An experimental study of process parameters for nano composites. *NanoWorld J.* 2024; 10(S1):S209-11.
- [23] Maniyar K, Jadhav P, Biradar R, Gawande J. Effect of nano-lubricants on journal bearing for performance enhancement. *NanoWorld J.* 2024; 10(S1):S206-8.
- [24] Maniyar K, Suhane S. Parametric analysis of electric discharge machining for nano composites. *NanoWorld J.* 2024; 10(S1):S63-5.
- [25] Maniyar K, Puri A, Pawar P, Patil V, Jadhav P, Patil G, et al. The comprehensive study for machining of metal matrix composites. *AIP Conf Proc.* 2024; 3196:040005– 5. <https://doi.org/10.1063/5.0227955>
- [26] Maniyar K, Warke P, Jadhav P, Waware S, Harsur S, Biradar R. An extensive study of mechanical properties and tribological characteristics for hybrid composites. *AIP Conf Proc.* 2024; 3203:030038-8. <https://doi.org/10.1063/5.0224994>
- [27] Maniyar K, Pawar P, Kolhe P, Ingale M, Patil P, Sarode G. The comprehensive study of synthesis and characterization of hybrid nano fluids. *AIP Conf Proc.* 2024; 3149: 030048. <https://doi.org/10.1063/5.0224988>
- [28] Priti R. Ghutepatil; Sarika Khapare; Rujuta Barve Joshi; Kamalkishor G. Maniyar. A critical review of nanotechnology in various fields of engineering. *AIP Conf Proc.* 2024 3149: 030002. <https://doi.org/10.1063/5.0224984>
- [29] Vaishnavi Thamke; Namrata Saravade; Snehal Banarase; Kamalkishor Maniyar. Seismic performance and cost analysis of AAC blocks vs. fly ash bricks: A comparative study utilizing STAAD pro. *AIP Conf Proc.* 2024 3196: 060006. <https://doi.org/10.1063/5.0227895>
- [30] Snehal Banarase; Mayur Banarase; Namrata Saravade; Vashnavi Thamke; Kamalkishor Maniyar. Evaluation of concrete building strengthening through non-destructive testing methods - A case study. *AIP Conf Proc.* 2024 3196: 040001. <https://doi.org/10.1063/5.0227927>
- [31] KamalKishor Maniyar, SunilKumar Harsur, Sagar N. Shinde, Jahier Abbas Shaaikh, Chandan M.N., Shobha Rupanar. An Experimental Investigation of Machining Parameters on Aluminum Composites. *Journal of Polymer and Composites.* 2024; 12(06):8-13.
- [32] KamalKishor Maniyar, SunilKumar Harsur. Experimental Findings of the EDM Process Parameters for Metal Matrix Composites. *Journal of Polymer and Composites.* 2024; 12(06):14-18.
- [33] Saravade, N., Sedani, C., Maniyar, K., Nandkishore, D., Deshmukh, S., Rupanar, S., Gidhad, B., & Surase, S. (2024). Study on Heavy Machinery Utilizing the Most Recent Technologies for Excavation of Road Construction and Mining. *Journal of Mines, Metals and Fuels*, 72(7), 667–673. <https://doi.org/10.18311/jmmf/2024/45327>

-
- [34] Patil, G. H., Mishra, E., Maniyar, K., Rawoot, M., & Satarkar, M. F. A. R. (2024). Study on Prediction of Lightning Impulses on Transmission Line Tower Due to Harsh Field and Variable Working Condition, Environmental Condition and Tower Footing Resistances. *Journal of Mines, Metals and Fuels*, 72(7), 763–769. <https://doi.org/10.18311/jmmf/2024/45322>
- [35] Jathar, A., Maniyar, K., Nawghare, B., Ansari, S., Priti Ghute Patil, Mali, C., Biradar, R., Deshmukh, S., Surase, S., & Gaikar, S. (2024). An Extensive Study of Nanomaterial and Nanotechnology in the Various Fields of Engineering. *Journal of Mines, Metals and Fuels*, 72(10), 1067–1074. <https://doi.org/10.18311/jmmf/2024/45658>
- [36] Nawghare, B., Maniyar, K., Jathar, A., Mali, C., Pawar, D., Jadhav, S. P., Deshmukh, S., Rupanar, S., Biradar, R., Gawande, J., & Warghat, S. (2024). An Extensive Study of Nano Fluids and their Applications in Real Life. *Journal of Mines, Metals and Fuels*, 72(10), 1119–1124. <https://doi.org/10.18311/jmmf/2024/45407>
- [37] Raut, P., Maniyar, K., Kakade, S., Rupanar, S., Bhalake, S., Mali, C., Deshmukh, S., & Biradar, R. (2024). A Comprehensive Analysis of the Synthesis, Properties and Uses of Nanofluid. *Journal of Mines, Metals and Fuels*, 72(9), 965–971. <https://doi.org/10.18311/jmmf/2024/45524>
- [38] Warghat, S., Sedani, C., Rasane, A., Maniyar, K., Dhanwate, V., Jadhav, S. P., Deshmukh, S., Gawande, J., & Biradar, R. (2024). An Extensive Study of Metal Matrix Composites and their Various Properties for Different Uses. *Journal of Mines, Metals and Fuels*, 72(9), 949–955. <https://doi.org/10.18311/jmmf/2024/45554>
- [39] Mali, C., Maniyar, K., Rupanar, S., Jathar, A., Nawghare, B., Kakade, N., Modak, G., Bhambere, V., Deshmukh, S., Gawande, J., & Biradar, R. (2024). An Analysis of Nanoparticles in Composite Materials. *Journal of Mines, Metals and Fuels*, 72(11), 1215–1223. <https://doi.org/10.18311/jmmf/2024/45579>
- [40] Patil, G., Mishra, E., Maniyar, K., & Warke, P. (2024). Four Quadrant Operation of Induction Motor Using H-Bridge in Harsh and Noxious Environment Field with Dust, Voltage Fluctuation and Major Load Variations. *Journal of Mines, Metals and Fuels*, 72(11), 1225–1231. <https://doi.org/10.18311/jmmf/2024/45557>
- [41] M. Mhaske, B. Gidhad, K. Maniyar and G. Ghuge, "The Role of Linear Algebra in Developing Machine Learning Solutions," 2024 3rd International Conference for Advancement in Technology (ICONAT), GOA, India, 2024, pp. 1-5, doi: 10.1109/ICONAT61936.2024.10775140
- [42] Ansari, S., Vaidya, K., Kadu, A., Rokade, A., & Maniyar, K. (2025). A Comprehensive Study on Modern Electronic Technologies in the Field Based Engineering Industry. *Journal of Mines, Metals and Fuels*, 73(2), 455–465. <https://doi.org/10.18311/jmmf/2025/47122>
- [43] Bhavna, Shubham Ghodke, Kamalkishor Maniyar, Using GeoGebra and SageMath to Assist Engineering Students in Tracing Different Curves and Solving Numerical Methods, *Communications on Applied Nonlinear Analysis*, Vol. 32 No. 6s (2025) Vol. 32 No. 6s (2025) DOI: <https://doi.org/10.52783/cana.v32.3310>
- [44] Nirmala Kakade, Devidas Gaikwad, Shabnam Sayyad, Chetankumar Sedani, Farook Sayyad, Shobha Rupanar, Nikita Bangar, Kamalkishor Maniyar, Thermal Analytical Characterization of *Gymnema sylvestre* Using TGA-DTA Technique, *Communications on Applied Nonlinear Analysis*, Vol. 32 No. 6s (2025) Vol. 32 No. 7s (2025) DOI: <https://doi.org/10.52783/cana.v32.3492>
- [45] Ekta Mishra, Pranjal Jog, Vilas S. Bugade, Ganesh H. Patil, Rajendra S. Jarad, Bhargav Kulkarni, Kamalkishor Maniyar, Case Study on Role of Solar Energy in Greenhouse Gas Emissions Reduction in India, *Journal of Information Systems Engineering and Management* Vol. 10 No. 19s (2025)pp. 462-471, <https://doi.org/10.52783/jisem.v10i19s.3058>,
- [46] Kamalkishor Maniyar, Shobha Rupanar, Farook Sayyad, Chetankumar Sedani, Jagannath Gawande, Prajakta Pawar. An Analysis of Machining Parameters for Metal Matrix Composite. *Journal of Polymer and Composites*. 2025; 13(02):76-85.