



Empirical Evidence From Small And Medium Enterprises For Measuring The Impact Of Green Entrepreneurship On Circular Economy Performance

Ajay Kumar Mohanty^{1*}, Prof. Purna prasad Arcot²

^{1*}CEO, Juststrive Industries Private Limited

²Dean, CMR University

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Introduction

Green entrepreneurship, which shows an elusive commitment to preserving the environment in business operations, is a major driving factor of green development. In this sort of strategy, emphasis is made on forming and managing companies with a stubborn focus on reducing ecological footprint and enhancing positive environmental impacts. Due to the importance being ascribed to the pertinent problem, an investigation of the role of green entrepreneurship in the effectiveness of circular economy within SMEs has to be conducted (Neumann, 2022). Thus, parsing the data helps reveal which of them promotes the core ideas of the circular economy principles: more resources and waste management. Analysing green entrepreneurship and circular economy effectiveness primarily for SMEs is the aim of the research hypotheses which explain the complex interconnection (Makhloufi et al. 2022). Having the introduction as a blazing fire helps to guide readers on the journey that the rest of the sections will go through. It ensures the completeness and clarity of the introduction, so the remaining part of the paper is well-arranged. The objective of this research to contribute to the clarification of the link between green entrepreneurship and the circular economy performance of SMEs is to provide insight into the use of such models in emerging trends of sustainable economic and environmental stewardship.

The Concept of Green Entrepreneurship

Green entrepreneurship manifests itself as a revolutionary management strategy that indexes the issue of environmental sustainability on the top priority list. The essence of green entrepreneurship is that green entrepreneurs are individuals or groups that base their businesses around the implementation and running of these businesses and have an unwavering commitment to reduce environmental harms and at the same time contribute to ecological welfare (Soomro et al. 2020). This section underlines what green entrepreneurship is all about. It therefore asserts its important principles and guiding goals. Firstly, it is the responsibility of businesses to use resources as efficiently as they can and produce minimum waste while performing different activities. Actions that give preference to resource conservation and responsible usage are methods that the green entrepreneurs pursue to promote prudent resource utilization which is environmental degradation minimization and long-term resilient ecology.

Waste minimization arises be a basic pillar of green entrepreneurship that focuses on maximizing waste decrease and adoption of green waste management practices. Innovative methods like recycling, upgrading and wasting energy conversion are used by green entrepreneurs to reduce the ecological residue of the business activities while at the same time recovering other resources that have not been tapped and creating more economic value. The environmental issues will be addressed to some extent and the needed growth and innovation will also be facilitated by these businesses that are adopting the waste reduction culture (Amankwah & Sesen, 2021). Also, green innovation propels eco-conscious business ventures as innovative technologies, goods and services are created and adopted, and they are focused on environmental sustainability. Innovative businessmen and businesswomen integrate state-of-the-art technologies and design principles into their solutions so that they can offer high-performing benefits that sync with ecological priorities (Yin et al. 2022). By way of constant experiments and modulations, these businesses do their best to spark the transformation of an economy that is both resilient and sustainable and this includes environmental considerations that are formally brought in through the company's operations.

Spectating a vivid glimpse of green entrepreneurship ventures in various industry segments signifies the multifaceted nature of this phenomenon as well as its ability to give rise to executive change. From a farmer's

cooperative venture to renewable energy startups, these examples show the variety of modes of green entrepreneurs working to transform traditional business criteria into the sustainability strategy framework. (Soomro et al. 2024) Through the exploitation of their creativity, ingenuity, and entrepreneurship, these innovators not only accomplish favourable ecological results but also re-construct the structure of growth and prosperity of the twenty-first century.

In a nutshell, green entrepreneurship manifests a comprehensive approach to leadership in the business world that goes beyond the conventional profit-driven model of organizational leadership to capture environmental sustainability as the core principle of organizational success. With its capital investment in resource efficiency, waste reuse and environmentally friendly technology, green entrepreneurship is an attractive option for a cleaner and more developed world of the future. Through trends of eco-managerial practices, green entrepreneurs are building a regenerative economy using operational partnerships.

Drivers of Circular Economy Performance in SMEs

The performance of small and medium enterprises (SMEs) in the implementation of the circular economy is determined by multiple variables participating through which various organizations act and the outcomes are secured (Alwakid et al. 2021). This part unravels the main issues determining the extent to which SMEs develop the circular economy, giving evidence of these factors' relationship and their accumulative influence on firms' long-term sustainability and endurance.

The top of the stack of these drivers came to be known as resource efficiency. It entails ameliorating the situation by reducing the usage of scarce resources and waste disposal as much as possible. Through the implementation of procedures that emphasize the conservation and efficiency of resources, SMEs can reinforce their ability to endure in their actions and lessen their environmental impact (Skordoulis et al. 2022). Innovations in energy-efficient production processes and the utilization of lean manufacturing techniques are among the key factors in the implementation of the circular economy by SMEs that propels cost-savings while also reducing their ecological stress. On top of that, sustainable waste management practices have a vital role in supporting iterative economic operations within SMEs, because businesses emphasize on reduction of waste production, maximum recovery of resources, and the movement of recycled materials from one industry to another in a circular system (Alvarez-Risco et al. 2021). Such waste reduction strategies as source segregation, material recovery and composting would help SMEs avoid the creation of large amounts of waste, generate values from waste products and participate in the circulation of resource flows to the degrowth of consumption of virgin resources.

The management of product lifecycle consequently becomes a centrally important determinant of the performance of circular economy in SMEs as businesses endeavour to extend the life span of products and render them highly durable and recyclable/refurbishable at the end-of-life phase (Potluri and Phani, 2020). Using methods like design for disassembly or remanufacturing and product takeback, small and medium-sized enterprises (SMEs) can make their product provision more environmentally friendly and diminish the pollution that is caused by product obsolescence or disposal. Besides the internal factors, external drivers like regulations government policies and market incentives are very much vital in the circular economy's context for SMEs (Wei et al. 2023). Therefore, the governments can achieve this by implementing the legislations that make sustainable procurement compulsory, promote eco-design principles and encourage resource recovery through recycling thereby creating an environment that allows for an easy economic transition of the resources. To the same extent, market-based processes like eco-labelling schemes, carbon pricing mechanisms, and green procurement initiatives can introduce SMEs to apply for circular economy practices and be known for their products and services through their environmental labels.

This requires strong stakeholder engagement and stakeholder collaboration, as businesses look for the best supply chain shortening, knowledge exchange, and collective responsibility, with their suppliers, customers, and other stakeholders. Through the creation of mutual collaboration and cooperation culture SMEs can use all the knowledge and resources of their stakeholders for a common goal and as a result transition towards a circular and sustainable economy will become faster (Drago & Gatto, 2022). In a nutshell, circular economy performance in an SME is a multifaceted and interconnected driver, with internal and external factors that help establish organizational practices and outcomes Through the focus on resource efficiency, waste management, product lifecycle management, and stakeholder involvement as their strategies for circular economy development, SMEs can improve their performance relating to a circular economy and contribute towards a more resilient and sustainable economy.

Empirical Evidence of Green Entrepreneurship's Impact on Circular Economy Performance

Empirical researches make it possible to obtain an understanding of the trade-offs between green entrepreneurship and circular economy performance by small and medium enterprises. In this part, the empirical evidence comes through a critical analysis of the most recent studies that address how green

entrepreneurship constitutes the main competitive advantage of the circular economy by providing as well both the benefits and challenges associated with it.

An abundance of research has shown the superior outcomes of green entrepreneurship in terms of resource efficiency, which suggests that environmentally conscious organizations of business can be highly effective regarding resource use, energy consumption, and production cost reduction (Galindo-Martín et al. 2020). Through technologies and processes that place a high priority on energy efficiency and resource optimization, green entrepreneurs aim not only to decrease the amount of waste generated but also to enhance resource utilization, which translates into the efficiency of the overall operations. It is not the sole but also helps in cost-effectiveness and competitiveness which as a whole will constitute in contributing to the objective of the circular economy. Furthermore, it has been demonstrated that implementing green entrepreneurship activities in SMEs assists in a reduction of waste and controlled management of waste which limits the environmental effect of this sector (Uvarova et al. 2021). By way of campaigning campaigns like waste segregation, recycling efforts and sustainable package solutions, green businesses may divert waste from landfills, engage the material for recovery, and guide the world towards a closed-loop economy. Not only does this help to mitigate the large-scale effect, but it also creates opportunities for resource recovery and value creation, which, in turn, fosters a sustainable circular business model.

Besides this, green entrepreneurship encourages sustainable innovation and product development, which ultimately leads to the expansion of eco-friendly technologies, raw materials, and procedures in different professions. The environmental innovation mindset of green entrepreneurs incorporates the principle of designing environmentally-conscious products, manufacturing processes and supply chain management to develop environmentally friendly solutions that minimize environmental effects without compromising the demand for the consumers' green products and services (Starchenko et al. 2021). It establishes the culture of imperfect conditions, thus the growth and innovation of SMEs, which ultimately leads to positive environmental outcomes and the enduring prosperity of business in the marketplace.

Green entrepreneurship as a concept has been seen to be advantageous with evident implications on circular economy performance, however, there exist necessary limitations and challenges in proving its impact on circular economy performance (Ye et al. 2020). Among the complexities that small to medium enterprises face when comparing their environmental performance and circularity with each other and the other industries is the absence of such standards and methodologies which makes the comparisons difficult. Besides that, the green entrepreneurship outcomes on the circular economies in the longer term may be hard to calculate and quantify through simple measurements, necessitating longitudinal studies and lifecycle assessments which take into account the full impact of the environmental benefits (Hameed et al. 2021). In addition to that, environment-related factors like industry dynamics, regulations frameworks and contrasting market conditions will impact the effectiveness of green entrepreneurship and the extent it will affect circular economy performance. The extent of cultural beliefs toward sustainability, consumer preference, as well as resource access and technology vary among regions and sectors hence the reshaping of green practices of the SMEs. With this in mind, future research should look back at these problems and difficulties by applying multidisciplinary approaches, combining qualitative and quantitative methods, and considering the surrounding variables while assessing the contribution of green entrepreneurship to the circular economy performance level.

Challenges and Opportunities for Green Entrepreneurship in SMEs

Green entrepreneurship contains mixed opportunities and challenges within small or medium-sized enterprises (SMEs) for promoting the agendas of sustainability and circular economy (Habib et al. 2020). This section sheds light on the various issues of capital constraints, lack of awareness and the regulatory barriers that stand in SME's way inclusive in the adoption of green entrepreneurship practices. In the same manner, it evaluates potential avenues through which climate change challenges can be mitigated with capacity-building, knowledge sharing, and oxygen financing mechanisms. Besides, this part put forward the successful business models of the SMEs that have been practising green entrepreneurship and have been able to demonstrate the two beneficial elements of sustainable practices namely the economic and environmental outcomes.

Small and medium-sized (SMEs) face great difficulties in implementing green business practices due to financial barriers. Lack of capital availability and high investment costs in making responsible technologies and system upgrades can be the obstacles preventing SMEs from applying these measures. Additionally, the green entrepreneurship principle and method are commonly unfamiliar to SME leaders and managers which makes them lag with adoption (Neumann, 2021). Sustainability strategies could potentially be regarded as not as important as core business objectives or as a result of knowledge and expertise gap some SMEs might be unable to implement green approaches. Regulatory obstruction is also one of the critical determinants which structure the way opportunities are provided to SMEs who participate in green entrepreneurship. The

presence of complicated environmental laws, compliance with requirements, and administration burdens may be a deterrent for new players as well as limit business progress in sustainable practices. Nevertheless, green entrepreneurship is not immune to these challenges, and on the bright side, there is a big room for SMEs to advance and adopt green startups. Among the capacity-building measures, training programs, workshops, and technical assistance can be used as instruments to enhance the level of literacy on sustainable practices which eventually leads to result-oriented approach of SMEs to adopt appropriate options more sustainably (Thelken & de Jong, 2020). Networks and platforms created for knowledge sharing and collaboration help to pass the experiences, practices and lessons learned among the SMEs, encouraging the likes and dislikes, as well as the innovations in green entrepreneurship.

Green financing instrument options, such as grants and loans, or incentive investments to SMEs could play a role in providing SMEs with financial resources to invest in green technologies and infrastructure. Governmental departments, financial institutions, and international organizations provide a diversity of financing options mandated to support green start-ups as well, the packages vary from incentives paid for energy efficiency upgrades to venture capital financing used for eco-innovations of startups (Omilabu et al. 2023). Victories of SMEs which have thrived by applying green business principles are a major source of inspiration as they demonstrate the potential of environmental preservation and economic prosperity. These enterprises portray how green could be the way to go for companies if they integrate green practices into their operations. The results may include cost savings, resource efficiency enhancement, brand reputation boost, and new market identification and customer attraction (Rok & Kulik, 2021). Now, the SMEs who have been early adopters of a proactive approach to sustainability have achieved more than just reducing their carbon footprint also they have become stronger in terms of their ability to withstand risks and compete in the market (Muangmee ET AL. 2021). In conclusion, however, the challenges cannot be overwhelming, but SMEs are still presented with many opportunities to participate in green entrepreneurship and the circular economy. By putting in concerted efforts to tackle financial, knowledge and legislative barriers and to maximize opportunities offered by support agencies and authorities, SMEs will have a possibility to realize the full potential of green entrepreneurship and pave the way to a greener future.

Conclusion

Green entrepreneurship within SMEs' marketing can be conceptualized as a landscape full of opportunities coupled with a set of obstacles. The financial problems which hinder SMEs from investing in sustainability initiatives remain high mainly because of the large amount of money that is needed upfront to adopt environment-friendly technologies. Moreover, an ignorance of green ideas and understanding among SME owners restrains the change. A must for the success of any company involved in the production of oil is clear regulation that covers a lot of environmental laws and reliable consistency in the enforcement of the policies. Consequently, SMEs also have the resources to counter such obstacles and go green towards sustainability. Capacity development, knowledge-sharing networks, and green financing are critical for having the right information and getting financial support. The case studies where there is success underline the diversifying nature of sustainable efforts with instances of cost savings alongside enhanced reputation, and new avenues of added markets. Through direct implementation of 'green' principles, SMEs decrease their ecological impact but also increase competitiveness at the same time. In essence, the SME sector faces notable impediments, yet it has an abundance of possibilities to lead an environmentally conscious business. Aided by well-thought-out strategies and resources at hand, the SME sector can counteract challenges and turn into a core supporter for realizing the objectives toward sustainability and circular economy.

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