

CONCEPTUAL PAPER

Digital Entrepreneurship for Sustainability: Opportunities in Emerging Green Market

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ABSTRACT

PURPOSE: Digital entrepreneurship in the green markets served as the research topic to understand market potential, together with the facing of obstacles and financial aspects of sustainable business operations.

DESIGN/METHODOLOGY/APPROACH: Survey questionnaires were used for data collection to obtain information from operators who are focused on digital implementation within the green sector.

FINDINGS: The findings demonstrate that digital tools can create better business efficiency and sustainable measurement capabilities while expanding markets. The main obstacles faced by businesses are their elevated expenses and restrictive regulations in combination with resource shortages.

LIMITATIONS: As the study relies on surveys, the responses may be subject to bias and perception of respondents, and the sample size and composition were limited to only early and mid-stage green enterprises.

ORIGINALITY/VALUE: This study with original data offers insights into how digitalisation transforms green entrepreneurship through innovation, which promotes sustainability.

KEYWORDS: *Digital Entrepreneurship; Sustainability Impact; Green Market; Digital Tools; Green Initiatives, Carbon Footprints.*

INTRODUCTION

The innovative approaches and sustainable contributions required for the environment are the business operational changes. This is attained with digital entrepreneurship within green markets (Qureshi *et al.*, 2021). Digital entrepreneurship allows companies to implement the use of technological business models that include blockchain-based platforms while utilising AI for resource maximisation along with IoT systems for energy consumption optimisation (Fernandes *et al.*, 2022). The companies, whose operations are focused upon sustainability in renewable energy, sustainable agriculture, and the circular economy, as well as green finance are the core of the green market. Such Companies use and adopt digital means for the evaluation of sustainability indicators, along with digital platforms for increased operational efficiency. This increased operational efficiency in turn results in the customer acquisition process of eco-friendly products (Diaz and Montalvo, 2022).

Digital entrepreneurs need to deal with several challenges when they are trying to build their businesses in green markets (Petersen *et al.*, 2023). Digital solutions are not adopted widely due to high costs associated with investments in starts-up, difficulties in technology implementation,



and regulatory issues that are hard to understand. Another persistent problem is the low level of consumer participation that has not been encouraged. Businesses encounter two main problems when trying to implement advanced technology systems like AI combined with blockchain because they lack sufficient finance and skilled professionals who can handle complex implementations (George *et al.*, 2021). The developing regulatory environment creates compliance difficulties because the various policies relating to digital technology adoption and green business practices exist in distinct regional guidelines (Mishra and Unny, 2018).

This research investigates digital tools for environmental impact promotion as well as digital green business model financial sustainability, alongside understanding the elements that facilitate sustainable growth in this sector (Holzmann and Gregori, 2023). It evaluates green market entrepreneurial insights to establish a complete framework of sustainable industry digital transformations and provide useful solutions to boost digital strategies' environmental and economic sustainability performance (Xu *et al.*, 2022). Online entrepreneurs in environmentally friendly markets continue to expand their influence through technological strategies that develop sustainability solutions. Businesses now use digital tools to enhance operations and lower their carbon emissions, and develop sustainable products and services because environmental and resource-related global concerns are rising (Hadizadeh *et al.*, 2024).

Information has been collected from digital entrepreneurs working in green markets to examine digital tools within sustainable enterprises, and to discuss both emerging green markets, along with understanding the challenges faced by business founders with technical sustainability (Kyaw *et al.*, 2022). The information collected has enabled researchers to uncover important patterns alongside sustainability barriers that exist within digital innovation spaces.

LITERATURE REVIEW

Sustainability and economic progress are combined through digital entrepreneurship, which embraces virtual technologies to create eco-friendly business models. The term digital entrepreneurship means to take advantage of the digital world along with its various platforms, tools and innovations to create and grow a business (Mondal, *et al.*, 2023). Digital entrepreneurs are the ones who to push the green market ahead with their sustainable business models structured through the application of circular economy principles, the use of renewable energy and efficient resource management (Ancillai, *et al.*, 2023).

Digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), blockchain and e-commerce have become the mainstay for businesses when the technologies provide support for sustainability. Böttcher *et al.* (2024) reveal that IoT applications in smart grids coupled with energy management systems deliver significant improvements in the overall energy efficiency. The use of blockchain technology in both supply chain transparency and energy trading has indeed been facilitated, as it acts as a trustworthy network for sustainability management, according to

D'Amico *et al.* (2021). Organisations take advantage of AI analytics to conduct predictive models that evaluate carbon footprints and perform life cycle assessments (LCA) (Aiginger and Rodrik, 2020).

The survey evaluates principal aspects of digital green entrepreneurship by incorporating findings from present-day studies. Main opportunities identified by research involve three primary aspects as given below.

Digital platforms are providing sustainable shopping opportunities as they help customers find environmentally friendly products, which support the development of a green marketplace (Parida *et al.*, 2019).

Through crowdfunding platforms, companies can access sustainable project capital while blockchain-based carbon credit markets enable them to receive sustainability investment (Na'immatun *et al.*, 2024).

Companies track resource use and manage waste and water supply by integrating artificial intelligence, mobile applications and software. This results in achieving measurable sustainability (Mondal *et al.*, 2023).

There are growth opportunities in this domain but the limiting barriers are still in place which hinder the efficient use of digital sustainability tools. Research indicates that the initial financial burdens, regulatory issues, and low consumer acceptance rates rank as the foremost impediments to these processes (Mondal *et al.*, 2023). The companies face two main problems in their journey to apply digital sustainability solutions on a larger scale due to their limited workforce skills in the so-called future technologies, such as IoT and AI (Salaheldeen *et al.*, 2024).

Digital tools have become a topic of effective scientific discussions with respect to sustainability performance measurement. The paper discusses various sustainability assessment techniques, particularly carbon footprint estimation, power consumption logging, and life cycle assessment (LCA) methods that have been mentioned in sustainability studies (Salaheldeen *et al.*, 2024). Various companies currently seek validation for their environmental impact through third-party sustainability certifications, including LEED, ISO 14001, and B Corp.

Digital entrepreneurship in green markets depends substantially on financial sustainability as its main essential element. Studies prove that organisations implementing subscription-based, performance-based, and recurring revenue models establish better conditions for sustained business longevity (Gregori and Holzmann, 2020). The survey data about revenue growth projections, investment hurdles, and return on investment (ROI) analysis match research that shows organisations with digital strategies in their sustainability initiatives will achieve better growth compared to conventional sustainability businesses (Gregori and Holzmann, 2020).

Xu *et al.* (2022) in their work have highlighted the importance of digital transparency along with ethical consumerism for driving present market trends.

The end part of the questionnaire investigates upcoming possibilities such as AI-powered energy optimisation systems, together with blockchain-and-bio-based carbon resource trade

systems and bio-based material production methods. The following research indicates that solar and wind power, along with electric vehicle network development and circular economy practices, are going to lead the green industry through 2030 (Aiginger and Rodrik, 2020).

The study finds support in this research review for digital entrepreneurship as it proceeds towards sustainability objectives and environmental resolutions while developing economic potential. A structured method exists through this questionnaire to evaluate digital green entrepreneurship trends since it corresponds with existing literature covering technology adoption, market dynamics, and financial sustainability research.

RESEARCH METHODOLOGY

The research design used structured survey techniques to evaluate digital entrepreneurship in green markets by examining market trends along with sustainability effects, financial prospects, and market prospects (Holzmann and Gregori, 2023). The research had a goal to obtain insights from stakeholders who actively use business models based on sustainability.

Research Design

The research was conducted through a quantitative survey containing multiple-choice questions together with open-ended inquiries, while the survey was divided into five separate areas for participants to respond to the questionnaires.

Respondent Profile: Collected demographic and organisational details.

The survey section focused on digital entrepreneurship alongside green market opportunities to analyse both technological adoption and business models and their market obstacles.

Sustainability Impact: Assessed environmental goals and measurement methodologies.

The study investigated projected revenues together with funding barriers and financial sustainability aspects.

The team analysed both upcoming technologies along with customer behavioural patterns in future markets.

Sampling and Data Collection

The survey was conducted with the participation of entrepreneurs and executives from the green industry, as well as decision-makers, to understand the leadership perspectives from founders, Chief Executive Officer (CEO), and Chief Technical Officer (CTO) positions (Hadizadeh *et al.*, 2024). The study focused on having major participation of individuals belonging to and working in renewable energy and sustainable agriculture, as well as the circular economy and electric vehicles, with green finance considered as another area of study. The data submitted comprised of fifty percent from Europe, twenty percent from North America, other twenty percent from the Asia-Pacific region,

and ten percent from other areas around the world. Researchers circulated the online questionnaire through various channels. These channels included professional networks and sustainability forums where they also participated in industry events. The survey was conducted anonymously, but was open to the participation of volunteers at their discretion.

Data Analysis

The collected data received descriptive statistical treatment to uncover main categories and significant distribution frequencies. The researchers compiled multiple-choice answers into percentages, then used classification systems for analysing open-ended responses. The analysis focused on:

- **Technology adoption:** Evaluating the role of IoT, blockchain, AI, and e-commerce in green businesses.
- **Sustainability impact:** Measuring efforts in carbon reduction, energy efficiency, and resource optimisation.
- **Financial performance:** Companies should examine financial patterns to detect revenue projections, along with determining funding constraints.
- **Consumer Behaviour:** Companies should observe how consumers drive changing trends towards sustainable products with transparent supply chains across the markets.

LIMITATIONS

The study achieves valuable results but includes certain restrictions on its findings:

The data received from participants contains potential bias because responses depend on their own perceptions.

The research sample does not account for all sectors within the green market space, especially the newly emerging industries.

Only companies at early stages and the middle range participated in the study, hence large corporations did not share their insights.

ETHICAL CONSIDERATIONS

This study raised no ethical or privacy concerns, as all responses were collected anonymously with no personal, sensitive or financial data obtained, and no conflicts of interest identified. Participation was voluntary, data protection principles were fully observed, and the dataset will be made available upon reasonable request; the questionnaire comprised five sections, with Tables 1 to 5 and Table 6 presenting full details based on the integrated data that underpin all sections of the study.

Table 1: Respondent Profile

Respondent ID	Company Name	Role	Industry Sector	Region of Operation
1	GreenTech Company	Founder	Renewable Energy	Europe
2	EcoAgri Solutions	CEO	Sustainable Agriculture	Asia
3	RecycleHub	CTO	Circular Economy	North America
4	SolarPlus Inc.	Marketing Manager	Green Fintech	Africa

Source: Authors' compilation

Table 2: Digital Entrepreneurship and Green Market Opportunities

Respondent ID	Business Model	Digital Platform Used	Top Opportunities Identified	Key Challenges
1	Subscription-based	Mobile App	Marketplaces for sustainable products.	High initial investment costs.
2	Product Sales	IoT Platform	Mobile solutions for sustainable farming practices.	Lack of consumer awareness.
3	E-commerce	Blockchain	Circular economy-based business models.	Regulatory issues.
4	Service-based	AI	Green fintech and crowdfunding.	Limited access to a skilled workforce.

Source: Authors' compilation

Table 3: Sustainability Impact

Respondent ID	Sustainability Goals	Environmental Impact Measures	Use of Digital Tools for Sustainability
1	Reducing carbon emissions.	Carbon footprint analysis.	Tracking and reporting environmental data.
2	Promoting renewable energy adoption.	Energy consumption data tracking.	Automating sustainability processes.
3	Minimising waste.	Life Cycle Assessment (LCA).	Reducing resource waste.
4	Increasing biodiversity.	Third-party certification.	Raising consumer awareness.

Source: Authors' compilation

Table 4: Financial Projections and Impact

Respondent ID	Expected Revenue Growth Rate	Factors Influencing Growth	Primary Financial Challenge	Revenue Model
1	20%	Regulatory policies and market demand.	High operational costs.	Subscription-based
2	10%	Expansion to new markets and tech adoption.	Access to funding.	Product Sales

Respondent ID	Expected Revenue Growth Rate	Factors Influencing Growth	Primary Financial Challenge	Revenue Model
3	30%	Consumer demand, green financing and partnerships.	Competition.	E-commerce
4	15%	AI integration, partnership and opportunities.	Scaling while maintaining sustainability.	Service-based

Source: Measured by authors

Table 5: Market Trends and Future Opportunities

Respondent ID	Emerging Technologies	Consumer Trends	Vision for Digital Entrepreneurship
1	Solar and Blockchain.	Transparent supply chains and digital monitoring.	Integrating AI to optimise resource use.
2	IoT and AI.	Sustainable farming practices and eco-labelling.	Expanding mobile solutions for green technologies.
3	Circular Economy and Recycling.	Circular economy participation and upcycled goods.	Building a blockchain for efficient recycling.
4	Green Fintech, and AI.	Green financing and sustainable product demand.	Creating a green fintech marketplace.

Source: Authors' compilation

FINDINGS AND DISCUSSION

It has been demonstrated by the analysis how digital entrepreneurial activities drive sustainable development in the green market (Mondal et al., 2023). Companies are using e-commerce platforms together with IoT technology and AI to enhance operational efficiency while monitoring environmental outcomes, according to survey data. Businesses experienced multiple advantages through digital entrepreneurship, including cost reductions, efficiency improvements, and better customer involvement. The main impediments to digital entrepreneurship growth include financial difficulties, regulatory barriers, and technological adoption challenges. The analysis shows that sustainable industries require policy backing, together with financial inducements, as well as capacity development programmes to speed up their digital transformation process. Digital tools generate quantifiable environmental effects, which demonstrate the need to combine digital innovations with green business approaches, according to the study findings. Table 6, defined based on the integrated data, is the main source of the entire section. Table 7 discusses emerging green markets and potential digital entrepreneurial opportunities. Table 8 shows the financial projections for a digital agriculture start-up for future four-year calculations up to 2027. It is derived from the average revenue per customer.



Table 6: Integrated Data Table

Respondent ID	Industry Sector	Digital Platform	Sustainability Goals	Revenue Growth Rate	Emerging Technologies	Key Challenges
1	Renewable Energy	Mobile App	Reducing carbon emissions	20%	Solar and Blockchain	High operational costs
2	Sustainable Agriculture	IoT Platform	Promoting renewable energy	10%	IoT and AI	Access to funding
3	Circular Economy	Blockchain	Minimising waste	30%	Circular Economy and Recycling	Competition
4	Green Fintech	AI	Increasing biodiversity	15%	Green Fintech and AI	Scaling while sustaining

Source: Authors' compilation

Table 7: Emerging Green Markets and Potential Digital Entrepreneurial Opportunities

Green Sector	Market Size (2024, USD)	Annual Growth Rate (%)	Digital Entrepreneurial Opportunities
Renewable Energy	\$500 billion	6%	Digital platforms for energy sharing, solar panel monitoring, blockchain for energy trade, and energy efficiency apps.
Sustainable Agriculture	\$350 billion	8%	Agri-tech apps, IoT-based farming solutions, supply chain platforms, and digital marketplaces for organic products.
Circular Economy	\$300 billion	7%	Recycling platforms, digital repair services, e-commerce for refurbished goods, and product-as-a-service models.
Green Finance	\$120 billion	12%	Fintech for green bonds, carbon credit trading platforms, and sustainable investment tools.
Electric Vehicles (EV)	\$200 billion	10%	EV charging networks, fleet management software, shared EV platforms, and digital platforms for EV sales/rentals.

Source: Measured by authors

Table 8: Financial Projection for a Digital Agriculture Start-up

Year	Revenue (USD)	Operating Costs (USD)	Profit (USD)	Customers (No.)	Average Revenue per Customer (USD)	ROI (%)
2024	5,00,000	3,00,000	2,00,000	1,000	500	67%
2025	10,00,000	5,00,000	5,00,000	2,500	400	100%
2026	20,00,000	8,00,000	12,00,000	5,000	400	150%
2027	35,00,000	12,00,000	23,00,000	10,000	350	192%

Source: Measured by authors

Respondent Profile

The survey results, as presented in Figure 13, demonstrate that founders and co-founders make up 40% of respondents. In comparison, CEOs account for 25% of survey participants, CTOs

comprise 15%, and marketing or operations managers form 10% of the sample. The current distribution pattern demonstrates that decision-makers are taking proactive steps to develop digital entrepreneurship activities throughout the green market.

Figure 14 shows that renewable energy (30%) proved to be the leading field, whereas sustainable agriculture (20%) occupied second place, and the circular economy (15%) held the third position. The combined portion of electric vehicles and green finance was 10%, and other sectors covered amounted to 5%. The pattern, demonstrated by Figures 1 to 4, indicates increasing attention towards sustainable power solutions together with waste reduction practices in the market. More than half of the participants surveyed are situated in the European market (50%), followed closely by North America and Asia-Pacific (20% each). Green businesses operate throughout the world because 10% of respondents belonged to regions outside Europe, North America, and the Asia-Pacific (Table 1).

Digital Entrepreneurship and Green Market Opportunities

Figure 15 shows that forty percent of surveyed companies have existed for three to five years as their primary age group, but one- to three-year-old businesses make up thirty percent of the sample. The data shows two distinct patterns: 20% of businesses operate for more than five years, while 15% of newly established ones have less than one year of operations. The data indicate that the green market consists of companies with both new start-ups and established organisations.

Figure 16 indicates that digital tools based on IoT solutions captured fifteen percent of the market, while e-commerce platforms earned twenty-five percent, and mobile application solutions secured twenty percent. The implementation of blockchain and AI demonstrated growing data-based sustainability solutions in the market (15% + 10%). Businesses mainly generate revenue through product sales, which represent 40% of their activities, while service-based approaches comprise 30% of their operations. Product sales dominate as the primary business model, yet service-based operations follow closely behind. Subscription-based strategies occupied 20% of the market, whereas freemium proved the least popular among businesses, with 10% adoption. The increasing market need demonstrates the growth of sustainable physical products as well as tech-oriented services.

Figures 6 to 12 demonstrate that digital opportunities for sustainable practices consist mostly of sustainable product marketplaces at 35%, while digital tracking tools for energy monitoring accounted for 30% and mobile agricultural solutions for sustainable cultivation for 20%. “Free” at 5% and green fintech solutions represented additional growth opportunities identified by the participants in this study.

Businesses deploy digital platforms to create more accessible methods, which lead to efficient sustainability practices. However, several challenges were noted. The survey results, mentioned in Figure 17, show that high initial investment costs (40%) rank as the primary obstacle faced by

businesses, whereas 30% denote consumer awareness shortcomings as the next most significant hurdle. Wider digital adoption faces obstacles from regulatory barriers, which amount to 20%, and technological barriers, which reach 10%.

Sustainability Impact

Figure 9 suggests that companies have selected to reduce carbon emissions by 40% while they aim to raise renewable energy adoption to 30% as their main sustainability goals. The sustainable initiatives to minimise waste and reduce water consumption proved to be as important as other environmental targets (20% and 10% respectively). Green business initiatives achieved CO₂ reduction (50%) as their most significant environmental outcome, and second to that were energy consumption reduction (25%) and waste reduction (15%), with resource efficiency improvement (10%) being the least impactful. Carbon footprint analysis provided 50% of the basis to measure impact, alongside 30% dependency on energy consumption tracking.

Life cycle assessments, together with third-party certifications, constituted 20 percent of the methods that established sustainability performance. Such metrics, collectively represented in Figures 8 to 12, show why organisations need data-based approaches to reach their sustainable targets.

Financial Projections and Impact

Figure 18 shows that the survey participants held different projections about the future increase in their business revenue. Survey participants mostly predicted their revenue to grow by between 10–20% (40%), with 25% predicting an increase of 20–30%. A significant 85% of participants predicted either minimum growth below 10% or growth above 30%.

The remaining 20% anticipated minimal expansion (0–10%). As depicted in Figure 20, the business growth was driven mainly by increasing sustainable product market demand at 50%, followed by geographic expansion at 30% and new digital technology adoption at 10%. Favourable regulatory policies, which were regarded as having a 10% probability, contributed to future business success.

Many respondents indicated that funding obstacles (50%) surpassed other financial hurdles, which include high business costs (30%) and fluctuations in the customer market (20%). Businesses encounter financial limitations that act as major barriers despite the potential that exists in the green market.

Market Trends and Future Opportunities

The implementation of AI optimisation in energy systems, blockchain trading, and bio-based materials development revealed potential levels of 15% and 10% respectively. As shown in Figure 9, consumers' demand for sustainable products is at the 50% level, while they are willing to accept

business transparency in supply-chain operations at the 30% level. Moreover, the concepts of the circular economy are gaining traction at a 20% rate, which points to a steady shift towards the use of sustainable products.

The research, depicted by Figures 1 to 5, indicates that digital entrepreneurship is a major factor in the transformation of the green market segment. Green Digital Ventures has been witnessing revenue growth year by year; it reached a peak at 600 million USD, while the blockchain adoption rate has reached 120%, with the number of devices hitting 250 million and implementation investment reaching 1,600 million. The process of adopting digital tools presents obstacles for businesses, yet the combination of new technologies and changing customer market trends creates an advantageous landscape for development. In Figure 19, sustainability matches customer preferences because customers buy eco-friendly products at a rate of 50% and seek visibility within their supply chains at 30%. Through strategic investment, along with regulatory backing and continuous innovation, businesses will drive sustainability and profitability during the next few years.

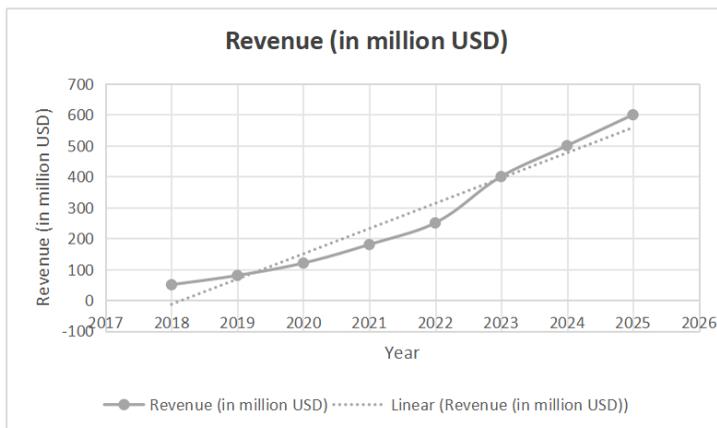


Figure 1: Revenue Growth in Green Digital Ventures

Source: Analysed by authors

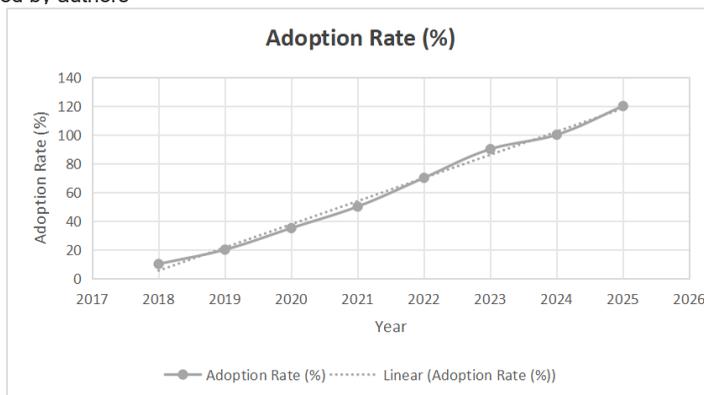


Figure 2: Adoption Rate of Blockchain for Supply Chains

Source: Analysed by authors



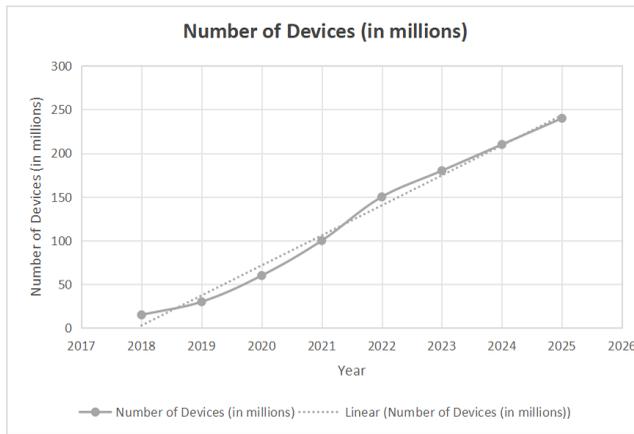


Figure 3: IOT Devices for Energy Harvesting

Source: Analysed by authors

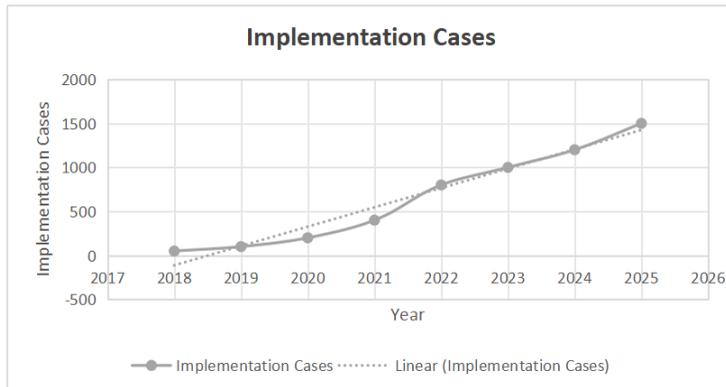


Figure 4: Number of Devices and AI Implementation in Waste Management

Source: Analysed by authors

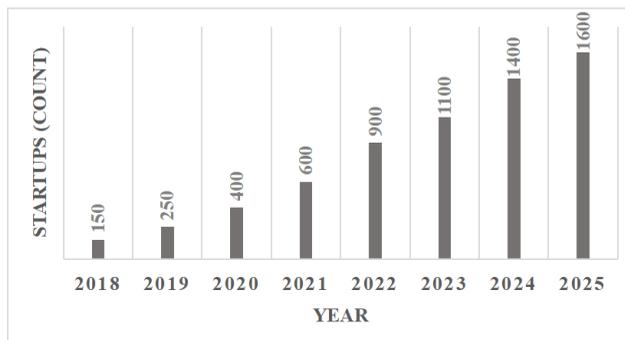


Figure 5: Digital Entrepreneurship: Growth in Start-ups by Year

Source: Analysed by authors

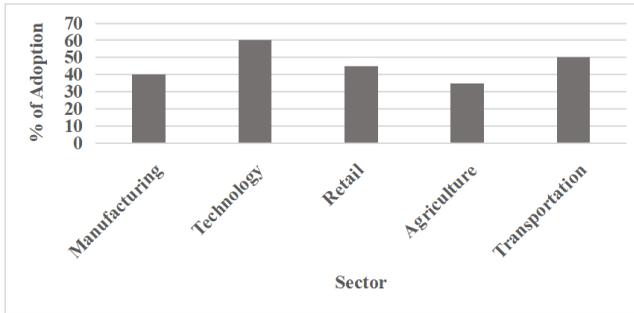


Figure 6: Adoption of Sustainable Practices

Source: Analysed by authors

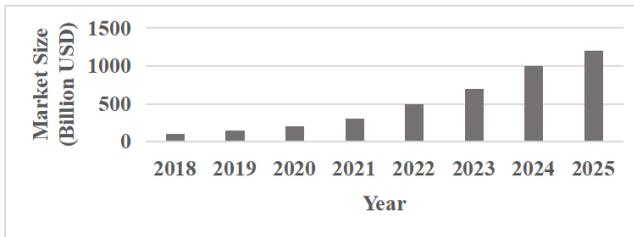


Figure 7: Green Markets: Market Size Over Time

Source: Analysed by authors

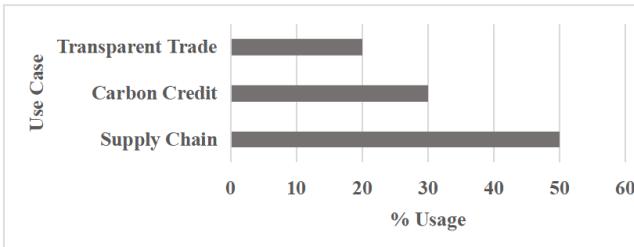


Figure 8: IoT: Applications in Green Energy

Source: Analysed by authors

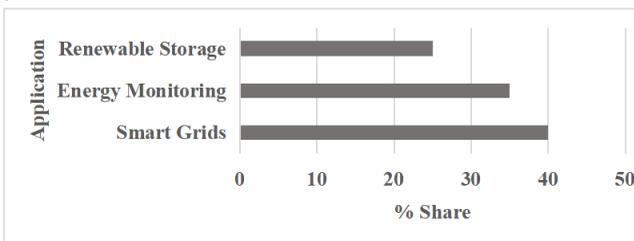


Figure 9: Blockchain: Usage in Green Initiatives

Source: Analysed by authors



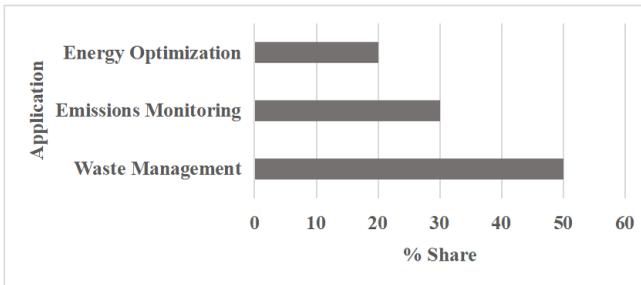


Figure 10: AI: Applications in Sustainability

Source: Analysed by authors

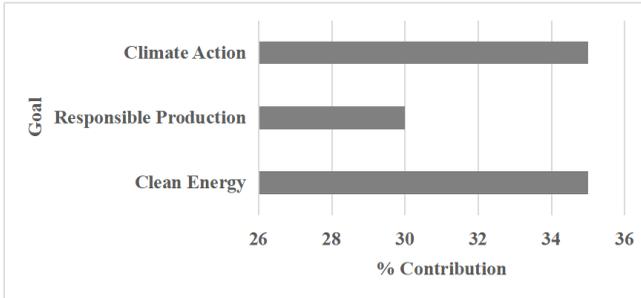


Figure 11: Sustainable Development: Alignment with SDGs

Source: Analysed by authors

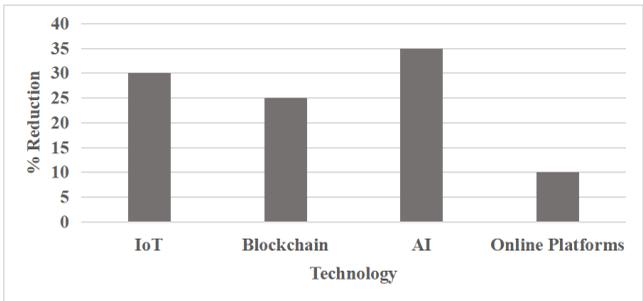


Figure 12: Environmental Impact: Reduction by Technology

Source: Analysed by authors

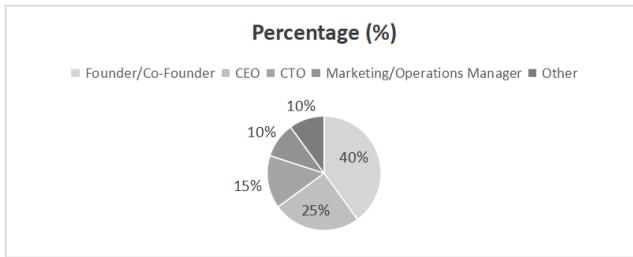


Figure 13: Respondent Profile

Source: Analysed by authors

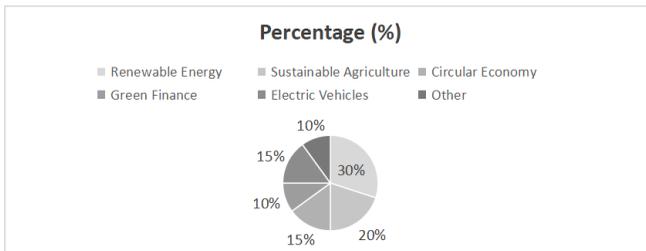


Figure 14: Industry Sector

Source: Analysed by authors

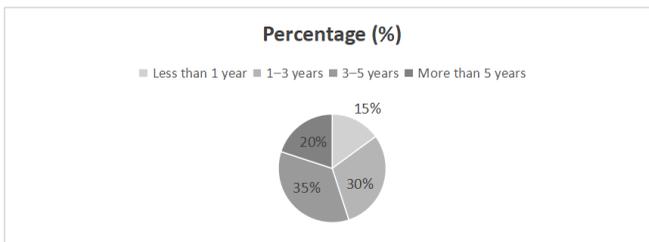


Figure 15: Business Age

Source: Analysed by authors

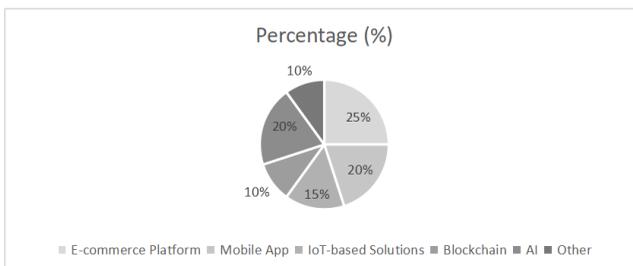


Figure 16: Main Digital Platform Used

Source: Analysed by authors

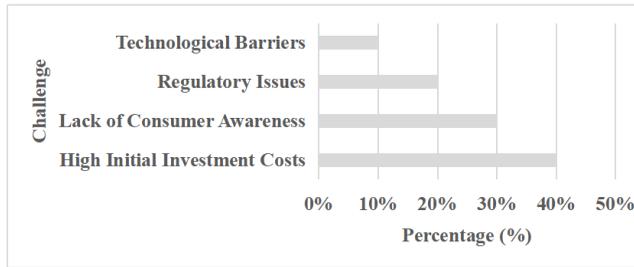


Figure 17: Challenges Faced

Source: Analysed by authors

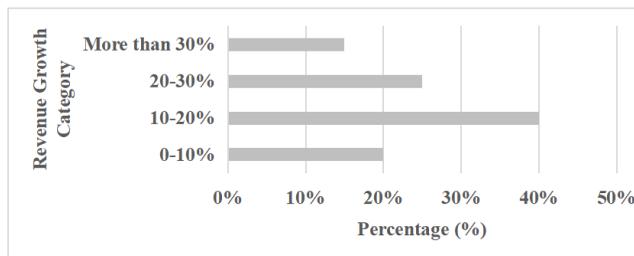


Figure 18: Expected Revenue Growth

Source: Analysed by authors

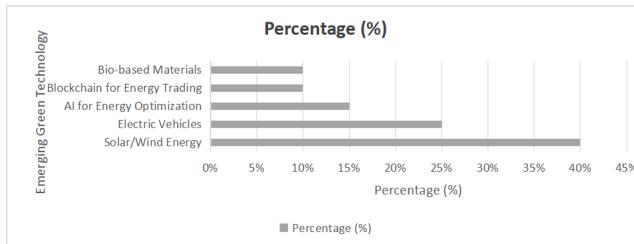


Figure 19: Emerging Green Technologies

Source: Analysed by authors

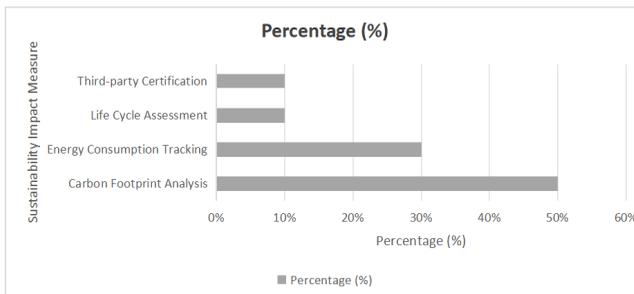


Figure 20: Measuring Sustainability Impact

Source: Analysed by authors

Figure 13 demonstrates how digital entrepreneurship exists in the green economy sector. Most of the participating decision-makers consist of founders, who account for 40% of the respondents, and CEOs, who make up another 25%, indicating that leadership directs sustainability-driven ventures. Figure 14 states that industries in renewable energy represent 35%, while sustainable agriculture constitutes 25% of the total industries, and both sectors primarily operate within European regions, which represent 50% of the total businesses. Sustainable digital businesses continue to expand due to favourable market and regulatory conditions in specific locations.

According to the research, most organisations maintain an early business existence because 70% operate for less than five years. Figure 15 explains that digital platforms based on IoT solutions and e-commerce platforms represent two-thirds of green entrepreneurial initiatives. The market shows different proportions of businesses operating through product sales (40%) and service delivery (30%), indicating a combination of material goods and digital service offerings.

Figure 16 and Figure 17 indicate that businesses are actively pursuing two main market opportunities to build digital platforms. These include sustainable product distribution (35%) and energy usage monitoring systems (30%), because businesses recognise growing demand for sustainability platform tools. The sectors continue to face two main obstacles that slow progress because of high initial capital requirements (40%) combined with limited customer awareness (30%). Organisations place sustainability at their centre while prioritising two main targets involving carbon emissions reduction by 40 percent and the achievement of 30 percent renewable energy use.

Organisations implement carbon footprint analysis and energy consumption tracking as the primary elements to make their environmental performance measurable (50% each). Business financial projections, as depicted in Figure 18, indicate optimistic trends because forty percent of businesses forecast their revenue will increase by 10 to 20 percent. The primary reason behind sustainable product demand in the market (50%) is matched by challenges with funding accessibility (50%). The lack of adequate funding and investor confidence in green businesses requires immediate improvement.

The future of green technology will be defined by solar and wind energy, as well as electric vehicles, according to current emerging trends. The research reveals that sustainable digital entrepreneurship continues to grow because technological innovation meets growing market needs for green solutions. Long-term success in developing sustainable businesses requires businesses to successfully overcome financial and regulatory barriers.

CONCLUSIONS

The findings demonstrate that digital entrepreneurship is increasingly embedded within the green economy, driven by leadership-led ventures, emerging technologies and favourable regional conditions. While early-stage firms show strong growth potential and optimism, particularly in

renewable energy and digital platforms, sustained success will depend on overcoming funding constraints, improving market awareness and addressing regulatory challenges to fully realise long-term environmental and economic value.

REFERENCES

- Aiginger, K. and Rodrik, D. (2020): Rebirth of Industrial Policy and an Agenda for the Twenty-First Century. *Journal of Industry, Competition and Trade*, 20(2), pp.189-207. Available at: <https://doi.org/10.1007/s10842-019-00322-3>
- Ancillai, C., Sabatini, A., Gatti, M. and Perna, A. (2023): Digital Technology and Business Model Innovation: A Systematic Literature Review and Future Research Agenda. *Technological Forecasting and Social Change*, 188, p.122307. Available at: <https://doi.org/10.1016/j.techfore.2022.122307>
- Böttcher, T.P., Empelmann, S., Weking, J., Hein, A. and Krcmar, H. (2024): Digital Sustainable Business Models: Using Digital Technology to Integrate Ecological Sustainability into the Core of Business Models. *Information Systems Journal*, 34(3), pp.736–761. Available at: <https://doi.org/10.1111/isj.12436>
- D’Amico, G., Arbolino, R., Shi, L., Yigitcanlar, T. and Ioppolo, G. (2021): Digital Technologies for Urban Metabolism Efficiency: Lessons from Urban Agenda Partnership on Circular Economy. *Sustainability*, 13(11), p.6043. Available at: <https://doi.org/10.3390/su13116043>
- Diaz, R. and Montalvo, R. (2022): Digital Transformation as an Enabler to Become More Efficient in Sustainability: Evidence from Five Leading Companies in the Mexican Market. *Sustainability*, 14(22), p.15436. Available at: <https://doi.org/10.3390/su142215436>
- Fernandes, C., Pires, R. and Gaspar Alves, M.C. (2022): Digital Entrepreneurship and Sustainability: The State of The Art and Research Agenda. *Economies*, 11(1), p.3. Available at: <https://doi.org/10.3390/economies11010003>
- George, G., Merrill, R.K. and Schillebeeckx, S.J. (2021): Digital Sustainability and Entrepreneurship: How Digital Innovations Are Helping Tackle Climate Change and Sustainable Development. *Entrepreneurship Theory and Practice*, 45(5), pp.999-1027. Available at: <https://doi.org/10.1177/1042258719899425>
- Gregori, P. and Holzmann, P. (2020): Digital Sustainable Entrepreneurship: A Business Model Perspective on Embedding Digital Technologies for Social and Environmental Value Creation. *Journal of Cleaner Production*, 272, p.122817. Available at: <https://doi.org/10.1016/j.jclepro.2020.122817>
- Hadizadeh, M., Ghaffari Feyzabadi, J., Fardi, Z., Mortazavi, S.M., Braga, V. and Salamzadeh, A. (2024): Digital Platforms as a Fertile Ground for the Economic Sustainability of Startups: Assaying Scenarios, Actions, Plans, And Players. *Sustainability*, 16(16), p.7139. Available at: <https://doi.org/10.3390/su16167139>
- Holzmann, P. and Gregori, P. (2023): The Promise of Digital Technologies for Sustainable Entrepreneurship: A Systematic Literature Review and Research Agenda. *International Journal of Information Management*, 68, p.102593. Available at: <https://doi.org/10.1016/j.ijinfomgt.2022.102593>
- Kyaw, K., Thomsen, S. and Treepongkaruna, S. (2022): Firms’ Potential for Economic Sustainability and Firm Value: The Moderating Role of Blockholders. *Sustainable Development*, 30(5), pp.884-901. Available at: <https://doi.org/10.1002/sd.2287>

- Mishra, G. (2018): Understanding the Role of Rural Entrepreneurs in Telecentre Sustainability: A Comparative Study of The Akshaya and Eseva Projects in India. *Technology Innovation Management Review*, 8(1). Available at: https://timreview.ca/sites/default/files/article_PDF/MishraUnnyR_TIMReview_January2018.pdf
- Mondal, S., Singh, S. and Gupta, H. (2023): Green Entrepreneurship and Digitalisation Enabling the Circular Economy Through Sustainable Waste Management - An Exploratory Study of Emerging Economy. *Journal of Cleaner Production*, 422, p.138433. Available at: <https://doi.org/10.1016/j.jclepro.2023.138433>
- Na'immatun, A., Purwanta, E. and Pradana, D. (2024): Green Marketing and Entrepreneurship: by Arne Nygaard, Norway, Springer, 2024, access (E-book EURO 93.08), ISBN: 978-3-031-50333-7. Available at: <https://doi.org/10.1080/08832323.2024.2434605>
- Parida, V., Sjödin, D. and Reim, W. (2019): Reviewing Literature on Digitalisation, Business Model Innovation, and Sustainable Industry: Past Achievements and Future Promises. *Sustainability*, 11(2), p.391. Available at: <https://doi.org/10.3390/su11020391>
- Petersen, N.H., Fuerst, S. and Torkkeli, L. (2023): Sustainable Entrepreneurship Management and Digitalisation: A Green Digital Innovation Radar. *Sustainability*, 15(19), p.14120. Available at: <https://doi.org/10.3390/su151914120>
- Qureshi, I., Pan, S.L. and Zheng, Y. (2021): Digital Social Innovation: An Overview and Research Framework. *Information Systems Journal*, 31(5), pp.647-671. Available at: <https://doi.org/10.1111/isj.12362>
- Salaheldeen, M., Ateeq, A., Al Ani, Z., Alzoraiki, M., Ali, S.A. and Milhem, M. (2024): Green Entrepreneurship and Sustainability in Developing Countries: Opportunities, Challenges, and Future Research Directions. *The AI Revolution: Driving Business Innovation and Research: Volume 1*, pp.525-534. Available at: https://doi.org/10.1007/978-3-031-54379-1_45
- Xu, G., Hou, G. and Zhang, J. (2022): Digital Sustainable Entrepreneurship: A Digital Capability Perspective Through Digital Innovation Orientation for Social and Environmental Value Creation. *Sustainability*, 14(18), p.11222. Available at: <https://doi.org/10.3390/su141811222>

BIOGRAPHY



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