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Determinants of Green Innovations in the Theoretical Context

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Abstract:

The green economy makes it possible to address significant environmental issues of regional, national, and international significance by establishing a sustainable economy built on the most economical use of natural resources in an environmentally friendly manner. Green practices can be used to lower carbon emissions, slow down the deterioration of the environment, increase food security, and improve energy and resource efficiency. Consequently, this procedure can boost a company's competitiveness by enabling it to leverage contemporary technology to create green business models that expand its ability to participate in GVC and by enhancing its market accessibility, particularly in light of new global environmental regulations. Greening MSMEs builds a resilient economy that improves living standards and helps to create jobs in green industries. "The creation or implementation of innovations, significant improvement of products (goods and services), processes, marketing methods, organizational structures, and institutional adaptation, which intentionally or unintentionally lead to environmental improvements compared to competitive alternatives" is the definition of "green innovation," according to the OECD (2009: 19). The analysis of the factors influencing green innovations within a theoretical framework is the primary goal of this study. Since the critical review of the literature, the analysis of the results of previous studies, and the creation of the conceptual model of the relationships between the variables are all predicated on the qualitative analysis, the methodology is primarily qualitative. The qualitative assessment will be conducted in order to address the issue as effectively as possible and to draw conclusions that are both reliable and generalizable in the lack of prior research on the factors that determine green innovations.

Keywords: Green Economy, Green Innovations, Driving Forces, Barriers, Environmental challenges
Jel Code: Q55, Q56, Q57, Q58

INTRODUCTION

The green economy is a significant issue because it makes it possible to address issues with the world's increasing energy demand and the ensuing effects of climate change, which in turn influence new growth patterns. In order to secure prosperity and a high standard of living for future generations, the green economy aims to establish new, sustainable patterns of production and consumption. These patterns will reduce environmental impact and maximize the use of natural resources. Governments and

corporations are investigating various aspects of the green economy, such as renewable energy and green technology, in response to the mounting threats to sustainability.

The shift to a green economy entails switching to environmentally friendly production and consumption practices, decreasing the amount of natural resources that are depleted and ecosystems that are harmed by economic activity, and increasing the supply of "clean," low-carbon energy that helps to mitigate climate change. In order to meet the national emission reduction target, set forth in the Paris Agreement, governments are becoming more and more involved in the development of green infrastructure. One of the two themes of the 2012 UN Conference on Sustainable Development (Rio+20) was the green economy, which is frequently referred to as a tool or a means of achieving sustainable development (Weick, 2016). The 2030 Sustainable Development Goals (SDGs) of the United Nations are to be achieved in part through the green economy. Massive efforts have been made to realize the green economy at the continental level in order to support MSMEs' participation in global value chains (GVC). These efforts include promoting low-carbon and energy-efficient technologies and enhancing natural disaster resilience to reduce the risks associated with climate change. According to UNEP (2010), the term "green economy" refers to an economic model that, over time, improves human well-being and reduces inequality while avoiding major environmental risks and ecological shortages for future generations. Due to worries about pollution, natural resource depletion, environmental degradation, and the effects of climate change, Albania has made the green economy a top priority. Albania's system of green innovations is still comparatively underdeveloped, which hinders the advancement and adoption of green practices and technologies. Albania must simultaneously work quickly to develop green innovations in all areas, including waste management, transportation, energy, and agriculture. The need for green innovations is demonstrated by the high reliance on fossil fuels, the inefficient energy infrastructure, the unsustainable agricultural practices, and the absence of recycling systems. There aren't many studies or reports that look at how innovations and green technology adoption work in Albania's particular economic, political, and social context. Green innovations may be hampered by elements like a lack of funding, poor institutional connections, new innovation skills, and low public awareness.

LITERATURE REVIEW

"Green innovation" or eco-innovation, can be defined as "the production and adoption of new technologies that lead to "a reduction of environmental risk, pollution and other impacts negative resource use (including energy use) compared to relevant alternatives' (Kemp & Pearson, 2007: 7). Fussler and James (1996) define eco-innovations as “new products and processes that provide value to customers and businesses while significantly reducing environmental impacts”. According to OECD (2009: 19), green innovation is defined as "the creation or implementation of innovations, significant improvement of products (goods and services), processes, marketing methods, organizational structures and institutional adaptation, which - with or without intention - lead to environmental improvements compared to competing alternatives". Oltra & Saint Jean (2009: 567) define environmental innovation "as innovations consisting of new or modified processes, practices, systems and products that positively affect the environment and thus contribute to environmental sustainability". Chen, Lai et al.., (2006: 534) define green innovation "as innovation related to green products or processes, including innovation in technologies that are involved in energy

conservation, pollution prevention, waste recycling, product design, green, or corporate environmental management". Hillary (2004) classified the various benefits of greening a business into benefits of internal and external. Intrinsic benefits are acquired advantages associated with internal functioning of SMEs, while external benefits are related to external interaction. Intrinsic benefits are often divided into three distinct categories: (i) organizational benefits (improvement of working conditions and safety), (ii) financial benefits (cost reduction from materials efficiency), and (iii) people benefits (improving ethical behavior of employees). External benefits are also divided into three categories: (i) commercial benefits (advantage gain competitive), (ii) environmental benefits (reduction of pollution), and (iii) communication benefits (creating a positive public image). Bansal & Roth (2000), examining the motives why companies go green, comprehensively classified drivers of corporate environmental responsibility into four main areas: (i) legislation, (ii) stakeholder pressure, (iii) opportunity economic and (iv) ethical motives. Many other researchers have included commercial benefits (Parry 2012) as an additional factor in why businesses adopt green practices.

The lack of necessary skills and expertise usually prevents SMEs from embracing new opportunities, even when they are generally aware of the potential in improving competitiveness (OECD, 2018). The complexities in implementing green business practices were examined in a study by Gupta and Barua (2018), who classified barriers into: (1) organizational or managerial, (2) technological, (3) financial and economic, (4) external partnership and stakeholder engagement, (5) government support, (6) market and customer, and (7) knowledge and information barriers. Unlike multinational firms that can support technological advancement through research and development activities, SMEs often depend on technology available in the market (Chang & Slaubaugh 2017). Given the increased competition, rapid changes in technology and the increase in power and choices on the part of consumers, success belongs to companies that are able to identify and understand the expectations and desired values of consumers and react to them effectively (Wang & Liao, 2007). Market-oriented firms are more likely to secure long-term profits by providing superior value to customers, as a result of identifying their current and expected needs, recognizing the strengths and plans of competitors, coordinated and appropriate actions in terms of time, as well as the introduction of new products in order to influence the market environment (Slater & Narver, 2000).

CLASSIFICATION OF GREEN INNOVATIONS

Green innovations are diverse and center on minimizing environmental impact and promoting sustainability. Typical examples of green innovations are as follows: 1. Renewable Energy Technologies: Developments in geothermal, hydroelectric, solar, and wind energy production to lessen dependency on fossil fuels. 2. Sustainable Agriculture Practices: Methods that support soil health, biodiversity, and water conservation, such as organic farming, permaculture, and precision agriculture. 3. Eco-Friendly Materials: The creation of recycled materials, biodegradable plastics, and environmentally friendly substitutes for conventional materials. 4. Waste Management Solutions: Cutting-edge approaches to reduce waste generation include recycling, composting, waste-to-energy technologies, and circular economy models. 5. Energy-Efficient Technologies: Goods and mechanisms intended to lower energy usage in industrial processes, transportation, and buildings.

Green innovation can be categorized according to a number of factors, including impact, technology, and application. For a deeper understanding, let's examine these classifications in more detail.

Impact-based Classification: Green innovations can be divided into groups according to how they affect society and the environment. The purpose of this classification is to distinguish between innovations that significantly improve sustainability and environmental friendliness and those that don't. Technology-driven Categorization: Utilizing technology to classify green innovation is another method. This classification distinguishes innovations according to the kind of technology they use, such as waste management, sustainable agriculture, and renewable energy technologies. Implementation-based Classification: The ways in which green innovations are implemented can also be used to categorize them. This category makes a distinction between innovations that concentrate on changing an individual's behavior, corporate sustainability programs, or laws and regulations.

Stakeholders can more effectively navigate the expanding field of green innovation and select initiatives that are in line with their objectives and values by being aware of these classifications.

GREEN INNOVATION'S DETERMINANTS

Driving Forces

Bansal & Roth (2000), examining the motives why companies go green, comprehensively classified drivers of corporate environmental responsibility into four main areas: (i) legislation, (ii) stakeholder pressure, (iii) opportunity economic and (iv) ethical motives. Many other researchers have included commercial benefits (Parry 2012) as an additional factor in why businesses adopt green practices.

Economic Drivers

Cost savings and efficiency gains are key economic motivators. Developing greener products or processes can reduce material, energy and waste costs in the long run (Charter2008). Improving energy efficiency in manufacturing can cut energy bills, while packaging design can lower material costs (Carrillo-Hermosilla 2010). Access to new markets and revenue streams is another driver. There is a growing consumer demand for environmentally friendly and socially responsible products and services (Chen, 2008; Charter 2008). Providing sustainable innovation allows companies to tap into green customer segments and increase sales. First mover advantage in emerging green technologies is a further economic incentive. Firms want to establish dominance in new markets for clean technologies and solutions (Horbach, 2008; Carrillo-Hermosilla 2010). Being ahead of rivals in eco-innovation can provide market power and reputational benefits. Regulatory compliance is an important motivator. Stricter environmental regulations and standards encourage investments in cleaner technologies and processes (Horbach, 2008; Kesidou & Demirel, 2012). Avoidance of fines, sanctions and legal risks forces companies to pursue sustainable innovations. Improved corporate reputation and brand benefits also play a role. The adoption of sustainable innovations enhances a company's image and social legitimacy (Chen, 2008; Carrillo-Hermosilla 2010). This can strengthen brand loyalty and allow firms to charge premium prices. Access to government incentives such as subsidies and tax breaks is another driver (Horbach, 2008). Policy instruments that reduce costs are important in promoting the diffusion of sustainable innovations.

Technological Drivers

Advances in science and technology are enabling many sustainable innovations (Carrillo Hermosilla 2010; Rennings, 2000). The rise of digital technologies such as sensors, big data analytics, artificial intelligence and block chain are driving smarter systems, optimized for resource efficiency and transparency (Geissdoerfer 2018). New developments in materials science are leading to greener materials such as plastics and composites biodegradable (Chen 2006). Advances in renewable energy technologies such as solar, wind, geothermal and biofuels facilitate low-carbon innovations (Jänicke, 2012). Advances in hydrogen and fuel cell technologies enable cleaner transportation and energy storage solutions (Buzzetti 2019). Biotechnology breakthroughs are driving bio-based processes and products with lower environmental footprints (Chen &Chang, 2013). Nanotechnology innovations provide sustainability benefits such as cleaner production, energy efficiency and water treatment (Charter 2008). Industrial ecology developments such as industrial symbiosis, by-product synergy and eco-industrial parks lead to circular ecosystem innovations (Yu 2014).

Environmental Drivers

Increasing environmental concerns such as climate change, resource scarcity, and pollution are key drivers for sustainable innovation (Horbach, 2008; Kesidou & Demirel, 2012). Stronger environmental regulations also play a key role in fostering eco-innovation (Carrillo-Hermosilla et al., 2010; Horbach, 2008). Reducing the consumption of energy, water and raw materials is a key environmental driver. Firms aim to develop cleaner and more resource efficient technologies and processes to reduce their environmental footprint (Charter et al., 2008; Horbach et al., 2013). This allows companies to reduce costs while also being more environmentally sustainable. Tackling climate change by reducing greenhouse gas emissions is another motivation. Companies pursue low-carbon innovations in products, services, and operations as part of climate change mitigation strategies (Kesidou & Demirel, 2012; Carrillo-Hermosilla et al., 2010). Developing countries also see eco-innovation as a means to pursue low-emission growth and development paths. Pollution prevention and management drives innovation in cleaner technologies and greener processes. Stricter pollution control regulations force firms to find solutions to reduce harmful discharges and emissions (Rennings, 2000; Horbach, 2008). Avoiding fines and sanctions is a major incentive. Waste management and closing material loops have become more important. Firms seek to maximize reuse, remanufacturing and recycling to create circular systems and minimize waste (Charter et al., 2008; Carrillo-Hermosilla et al., 2010). This aims to reduce environmental impacts and resource costs. Conservation of biodiversity and ecosystem health are also motivating. Sustainable product and process innovations seek to preserve natural habitats, species and ecosystems (Carrillo-Hermosilla et al., 2010).

Barriers

The lack of necessary skills and expertise usually prevents SMEs from embracing new opportunities, even when they are generally aware of the potential in improving competitiveness (OECD, 2018). The complexities in implementing green business practices were examined in a study by Gupta and Barua (2018), who classified barriers into: (1) organizational or managerial, (2) technological, (3) financial and economic, (4) external partnership and stakeholder engagement, (5) government support, (6) market and customer support, and (7) knowledge and information barriers. Unlike multinational firms that can support technological advancement through research and

development activities, SMEs often depend on technology available in the market (Chang & Slaubaugh 2017).

Economic Barriers

High costs: The development and adoption of sustainable innovations often require significant initial investments, which can hinder firms with limited financial resources (del Río et al., 2016; Horbach et al., 2012). Uncertain or insufficient return on investment: The payback period for sustainable innovations may be longer and the return on investment uncertain, making them less commercially viable (Chen et al., 2006; Kesidou & Demirel, 2012). Traditional economic systems: Existing economic structures and incentives often favor unsustainable technologies, processes and business models, hindering the sustainability transition (Markard et al., 2012). Externalities: Economic externalities such as pollution costs are not internalized in market prices, leading to persistent negative externalities (Jaffe et al., 2005). Imperfect information: Information asymmetries about sustainability costs/benefits and available innovations slow their diffusion (Horbach et al., 2012). Separation of incentives: Mismatches between parties who bear costs versus those who benefit from eco-innovations, e.g. landlords and tenants (del Río et al., 2016). Investments: Firms with prior investments in older technologies or assets may be 'locked in', resisting newer sustainable innovations (Markard et al., 2012). Lack of consumer demand: Insufficient market demand for greener products especially at higher prices is a barrier (Chen et al., 2006).

Regulatory Barriers

Lack of coherent policies - The lack of sustainable and long-term policy frameworks creates uncertainty and hinders eco-innovation (Blind et al., 2017; Costantini et al., 2017).

Policy inconsistencies - Conflicting policies or inconsistencies at levels of governance hinder sustainable transition (Kivimaa & Kern, 2016).

Regulatory Rigidity - Inflexible regulations and standards can preserve unsustainable technologies and hinder cleaner innovations (Blind et al.,2017).

Policy gaps - The lack of regulation in certain areas results in the non-addressing of negative externalities (Costantini et al., 2017).

Lobbying influence – Fossil fuel producing and trading companies or industry interests lobby against environmental regulations and standards (Johnstone et al., 2012).

Technological Barriers

Technological lock-ins - The dominance of existing unsustainable technological systems creates dependency (Unruh, 2000; Blind et al., 2017).

Risks of innovation - Unproven sustainability innovations have risks of failure, low performance or unanticipated effects (Hekkert et al., 2007).

Complex systems - Integration and scaling of complex sustainable technologies is difficult (Hekkert et al., 2007; Blind et al., 2017).

Resource constraints - Constraints such as limited technical skills or infrastructure hinder development (Kivimaa & Kern, 2016; Smith et al., 2010).

Scientific gaps - Limited scientific knowledge and data in some environmental areas affect progress (Blind et al., 2017).

CONCLUSIONS

The environmental challenges, like climate change switched the policy makers' attention to eco-innovation, seen as a way to develop sustainable solutions. The eco-innovative technologies are widely used by the actors from various fields in order to improve the production process as well as the environmental performance of companies. In this context, the paper has analyzed the concept of eco-innovation and its contribution to sustainable development highlighting that few generic approaches to the classification of eco-innovation could be identified in the literature. The review of studies on eco-innovation has revealed numerous determinants of eco-innovation and different categories in which they have been integrated by various authors. This systematic review of literature and the results obtained could be the starting point for further researches useful for the academic, policy makers and professionals.

Green innovation refers to new or modified processes, practices, systems and products that contribute to sustainable development by meeting human needs and preserving the environment. Key determinants of green innovation include policy incentives, access to finance, technical capabilities, consumer demand and collaboration between stakeholders. Lack of these factors can hinder green innovations. For Albania, studies show that weaknesses in the national innovation system limit Green Innovations. These include limited research and development funding, a lack of high-tech firms, and weak links between research and industry. Green innovations bring environmental benefits such as reduction of pollution and waste, as well as economic benefits such as cost reduction, new income opportunities, competitiveness, improved productivity as well as increased reputation especially when supported by possible policies. Adoption of green innovations in Albania remains low due to financial constraints, low awareness and lack of technical skills of firms.

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