International Journal of Multidisciplinary Research and Growth Evaluation.

Business Consulting for Sustainable Energy Practices: Enabling SMEs to Compete in a Global Energy Economy

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Article Info
ISSN (online): 2582-7138
Volume: 05
Issue: 01
January-February 2024
Received: 01-01-2024
Accepted: 03-02-2024
Page No: 1692-1698

Abstract
This paper explores the vital role of business consulting in enabling small and medium-sized enterprises (SMEs) to adopt sustainable energy practices, positioning them for success in the global energy economy. As the global energy landscape shifts towards sustainability, SMEs are increasingly called upon to transition to renewable energy solutions. However, many face significant challenges, including financial constraints, limited expertise, and complex regulatory environments. Business consultants are crucial in bridging these gaps by providing tailored strategies to help SMEs navigate the complexities of clean energy adoption. This paper examines consultants' strategies, such as securing financing, facilitating the integration of renewable technologies, and guiding regulatory compliance. Additionally, the study emphasizes the importance of competitive advantage for SMEs in the global energy market and how sustainable practices can enhance their market positioning. The paper also discusses the implications for SMEs, consultants, and policymakers, providing actionable insights to foster a sustainable energy future. Finally, the paper outlines areas for future research, particularly focusing on emerging technologies and evolving regulatory frameworks.

DOI: https://doi.org/10.54660/.IJMRGE.2024.5.1.1692-1698

Keywords: Business Consulting, Sustainable Energy, SMEs, Clean Energy, Competitive Advantage, Renewable Energy Technologies

1. Introduction

1.1 Background on Sustainable Energy Practices and SMEs

The global energy landscape has undergone a significant transformation in recent years, driven by the imperative to combat climate change, reduce greenhouse gas emissions, and move towards cleaner, more sustainable energy sources. Governments, corporations, and individuals are increasingly embracing renewable energy technologies such as solar, wind, hydro, and geothermal, as well as energy-efficient systems in an effort to reduce reliance on fossil fuels. This transition towards sustainable energy practices is essential for environmental preservation and ensuring long-term energy security and economic stability (Paul, Ogugua, & Eyo-Udo, 2024b; Shittu *et al*., 2024).

Small and medium-sized enterprises (SMEs) play a pivotal role in this energy transition, contributing significantly to global economic development, innovation, and job creation. Despite their importance, SMEs often face unique challenges when attempting to adopt sustainable energy practices (Oyenuga, Sam-Bulya, & Attah, 2024b). These enterprises are typically resource-constrained, lacking the financial capital, technical expertise, and organizational capacity to implement renewable energy solutions or improve energy efficiency. However, SMEs also have the potential to act as leaders in clean energy innovation by developing and deploying scalable solutions, engaging in energy efficiency improvements, and driving the adoption of renewable energy systems (Oyedokun, Ewim, & Oyeyemi, 2024). Their ability to adapt and innovate makes them an integral part of the energy sector's evolution. Thus, supporting SMEs through business consulting services becomes critical in facilitating their transition towards sustainable energy practices and ensuring their competitiveness in the global energy economy (Oyenuga, Sam-Bulya, & Attah, 2024a; Paul, Ogugua, & Eyo-Udo, 2024a).

1.2 Need for business consulting in the energy sector

SMEs face significant hurdles as the energy sector becomes increasingly complex with the growing adoption of renewable energy technologies, energy efficiency systems, and evolving regulatory frameworks. The energy sector is no longer just about energy generation but involves complex systems of management, distribution, and consumption that are increasingly reliant on sophisticated technologies. Furthermore, SMEs operating in this space must navigate a shifting regulatory landscape, adopt innovative technologies, and manage the risks associated with these transitions. These factors often create challenges for SMEs regarding strategic planning, financing, and effective implementation of sustainable practices (Okon, Odionu, & Bristol-Alagbariya, 2024b; I. Olaleye, V. Mokogwu, A. Q. Olufemi-Phillips, & T. T. Adewale, 2024).

This is where business consulting becomes crucial. Business consultants with expertise in sustainable energy practices can help SMEs overcome these barriers by providing strategic advice, access to funding, and technical support. They guide SMEs in developing tailored energy strategies that optimize energy consumption, reduce environmental impact, and enhance profitability (Omowole, Urefe, Mokogwu, & Ewim, 2024b). Business consulting services assist in identifying cost-effective, sustainable solutions that align with both business objectives and regulatory requirements. Moreover, consultants help SMEs stay competitive by integrating advanced technologies such as smart grids, energy storage solutions, and renewable energy systems. Thus, business consultants play a vital role in enabling SMEs to navigate the complexities of sustainable energy adoption and positioning them as leaders in the green economy (Omowole, Urefe, Mokogwu, & Ewim, 2024a; Oyenuga *et al*., 2024a).

1.3 Objectives and scope of the study

This paper aims to explore the role of business consulting in helping SMEs transition to sustainable energy practices and their importance in fostering competitiveness in the global energy economy. The primary objective is to identify the challenges that SMEs face when adopting sustainable energy practices, with a particular focus on the role that business consultants play in addressing these challenges. The paper will explore the strategies used by business consultants to assist SMEs in integrating renewable energy technologies, improving energy efficiency, and navigating regulatory challenges. Additionally, the study will examine the implications of these strategies for enhancing the competitiveness of SMEs in a global energy market increasingly driven by sustainability and green technologies.

The scope of the study includes an in-depth analysis of the various business consulting services available to SMEs in the energy sector, focusing on how these services support SMEs in adopting sustainable practices. The study will also explore the business models employed by consultants to engage SMEs, the types of tools and technologies used in consulting practices, and how consulting services help overcome common barriers such as financing constraints and knowledge gaps. Ultimately, this paper will provide actionable insights into how business consulting can contribute to the success of SMEs in the sustainable energy transition and its implications for their competitiveness on the global stage.

2. Theoretical and conceptual framework

2.1 Theories on sustainable business practices

Sustainable business practices are underpinned by various theoretical frameworks that emphasize the integration of economic, environmental, and social dimensions into business operations. Sustainability theory, which advocates for the balance between economic growth, environmental protection, and social equity, serves as a foundation for understanding how businesses, including SMEs, can align their operations with sustainability principles (Adewale, Olorunyomi, & Odonkor, 2023). According to sustainability theory, businesses must consider long-term impacts on society and the environment, as well as financial outcomes, ensuring that their operations do not deplete natural resources or harm ecosystems. For SMEs in the energy sector, this theory drives the need to transition from traditional, resource-intensive practices to cleaner, more sustainable energy solutions (I. A. Olaleye, C. Mokogwu, A. Q. Olufemi-Phillips, & T. T. Adewale, 2024b; Olufemi-Phillips, Ofodile, Toromade, Igwe, & Adewale, 2024b).

Business strategy models, such as the Resource-Based View (RBV), are also instrumental in understanding how SMEs can leverage their unique capabilities to implement sustainable practices. The RBV suggests that a firm’s resources—whether physical, human, or technological—are central to its competitive advantage. SMEs can utilize resources like renewable energy technologies or energy-efficient processes to differentiate themselves from competitors (Abbey, Olaleye, Mokogwu, & Queen, 2023). Business strategy models like Porter’s Generic Strategies and Value Chain Analysis also provide frameworks for SMEs to incorporate sustainability into their core operations. These models highlight how businesses can create value and build competitive advantages through sustainability-focused initiatives (Odionu, Bristol-Alagbariya, & Okon, 2024; Okeke, Alabi, Igwe, Ofodile, & Ewim, 2024a).

Innovation theory, particularly Disruptive Innovation Theory, offers insights into how SMEs can pioneer sustainable energy practices. This theory explains how small companies, often with fewer resources than incumbents, can introduce innovative solutions that disrupt established markets. In the context of clean energy, disruptive innovations, such as cost-effective solar panels or energy-

efficient technologies, enable SMEs to challenge larger firms and become leaders in sustainability. For SMEs, innovation is not only about technological advancements but also involves creating new business models that enable sustainability in a rapidly changing energy landscape (Okeke, Alabi, Igwe, Ofodile, & Ewim, 2024b; Okon, Odionu, & Bristol-Alagbariya, 2024a).

2.2 Business consulting in the context of sustainability

Business consulting in the context of sustainability refers to the advisory services provided to companies to help them integrate sustainable energy practices into their operations. Consultants assist SMEs in identifying and adopting technologies, strategies, and policies that promote environmental responsibility while optimizing business performance. Sustainable business consulting is not only about implementing green technologies but also involves developing long-term sustainability strategies that align with business goals and address global challenges such as climate change (Olufemi-Phillips, Ofodile, Toromade, Igwe, & Adewale, 2024a; Omowole, Olufemi-Phillips, Ofodile, Eyo-Udo, & Ewim, 2024).

Consultants guide SMEs through the entire process of adopting sustainable energy solutions, from initial assessments to implementation. They provide expertise in conducting energy audits, recommending renewable energy systems (such as solar or wind), improving energy efficiency through optimization of processes, and helping companies reduce their carbon footprint. Furthermore, consultants assist SMEs in navigating the complexities of regulatory compliance, ensuring that they meet environmental laws and benefit from available incentives such as government subsidies for renewable energy adoption (Kamau, Myllynen, Mustapha, Babatunde, & Alabi, 2024; Myllynen, Kamau, Mustapha, Babatunde, & Collins, 2024).

The role of business consultants extends beyond technical advice; they also support SMEs in understanding the financial aspects of sustainability. Consultants help businesses create financial models that assess the costs and savings associated with implementing renewable energy technologies and energy-efficient systems. They also assist in securing funding through green bonds, subsidies, or venture capital. In a competitive global energy market, business consultants enable SMEs to access the right resources and expertise to achieve sustainability, efficiency, and profitability simultaneously (Ige, Chukwurah, Idemudia, & Adebayo, 2024; E. K. Jessa, 2024).

2.3 Competitive advantage and global energy economy

The concept of competitive advantage is central to understanding how SMEs can position themselves within the global energy economy. Competitive advantage refers to the attributes that allow a company to outperform its competitors in terms of profitability, market share, and growth. In the energy sector, sustainable practices provide SMEs with an edge over competitors by offering differentiated products and services, reducing operational costs, and aligning with evolving consumer preferences for environmentally responsible businesses (Eyieyien, Idemudia, Paul, & Ijomah, 2024a; Ezeife, Eyeregba, Mokogwu, & Olorunyomi, 2024a). SMEs can gain competitive advantage by integrating sustainable energy practices into their business models. Adopting renewable energy solutions can lead to significant cost savings in the long term by reducing energy consumption and minimizing reliance on volatile fossil fuel markets (Ezeife, Eyeregba, Mokogwu, & Olorunyomi, 2024b). Moreover, adopting clean energy solutions positions SMEs as environmentally conscious companies, appealing to customers and investors who prioritize sustainability. In the global energy economy, where sustainability is increasingly becoming a key factor in decision-making, SMEs that adopt clean energy practices can attract new customers, access government incentives, and become preferred partners in supply chains focused on green practices (Hassan, Collins, Babatunde, Alabi, & Mustapha, 2024; E. Jessa & Ajidahun, 2024).

Furthermore, sustainable energy practices can serve as a mechanism for innovation, providing SMEs with opportunities to develop new products or services that meet the rising demand for clean energy solutions. This can further enhance their competitive position in global markets. As international regulatory frameworks, such as the Paris Agreement on climate change, incentivize the transition to clean energy, SMEs with advanced energy practices are well-positioned to take advantage of the global shift toward renewable resources (Eyieyien, Idemudia, Paul, & Ijomah, 2024b). By aligning themselves with sustainable energy trends, SMEs can not only reduce costs and environmental impacts but also secure their future in a rapidly evolving global energy economy. Thus, sustainable energy practices not only serve as a means to address climate change but also as a strategic advantage for SMEs to enhance their market position and competitiveness on a global scale (I. A. Olaleye, C. Mokogwu, A. Q. Olufemi-Phillips, & T. T. Adewale, 2024a; Olufemi-Phillips, Igwe, Ofodile, & Louis, 2024).

3. The role of business consulting in sustainable energy practices

3.1 Consulting strategies for adopting sustainable practices

Business consultants play a pivotal role in helping SMEs transition to sustainable energy practices by providing tailored guidance on renewable energy adoption, energy efficiency improvements, and carbon footprint reduction. Consultants typically begin by conducting comprehensive energy audits, assessing the company's current energy usage, waste patterns, and sustainability practices. This enables them to identify areas where SMEs can achieve energy savings, reduce costs, and transition to cleaner energy sources (Dada, Eyeregba, Mokogwu, & Olorunyomi, 2024a). One key strategy is renewable energy adoption, where consultants guide SMEs in selecting appropriate renewable energy systems such as solar panels, wind turbines, or biomass systems. They help assess the feasibility, costs, and expected savings of integrating these technologies into business operations. For SMEs, the upfront capital requirements of renewable energy technologies can be daunting, and consultants play a crucial role in identifying funding sources such as government grants, subsidies, or private investors who specialize in clean energy (Daramola, Apeh, Basiru, Onukwulu, & Paul, 2024; Durojaiye, Ewim, & Igwe, 2024).

Another consulting strategy involves energy efficiency improvements. Consultants advise SMEs on adopting energy-efficient systems, such as LED lighting, energy-efficient heating and cooling, and advanced insulation techniques, which reduce energy consumption without the need for large capital investments. Business consultants also help SMEs implement smart energy management systems,

which enable real-time monitoring and optimization of energy usage, allowing businesses to reduce wastage and improve operational efficiency. By improving energy efficiency, SMEs not only reduce their operating costs but also contribute to a more sustainable energy system (Chukwurah, Abieba, Ayanbode, Ajayi, & Ifesinachi, 2024; Chukwurah, Adebayo, & Ajayi, 2024).

Finally, consultants work with SMEs to design carbon reduction strategies. These strategies involve measuring and reducing greenhouse gas emissions, either through energy optimization, renewable energy sourcing, or carbon offsetting programs. Consultants help SMEs comply with local and international regulations related to emissions, making the transition smoother and more cost-effective. Through these consulting strategies, SMEs can integrate sustainable energy practices into their business models, enhancing both their environmental responsibility and profitability (Chukwurah, Ige, Idemudia, & Adebayo, 2024; Dada, Eyeregba, Mokogwu, & Olorunyomi, 2024b).

3.2 Tailoring Solutions for SMEs

A one-size-fits-all approach is often insufficient when working with small and medium enterprises (SMEs), as their needs, capabilities, and resources vary significantly from one company to another. Therefore, it is critical that business consultants offer customized solutions that align with each SME's specific situation. Unlike large corporations with vast resources, SMEs often face unique challenges, such as limited budgets, lack of technical expertise, and constrained access to capital for implementing energy-efficient solutions (Apeh, Odionu, Bristol-Alagbariya, Okon, & Austin-Gabriel, 2024a, 2024c).

Business consultants take a personalized approach by analyzing the SME's business model, financial standing, and operational structure before recommending appropriate sustainable energy solutions. For example, a small manufacturing company may require a different energy solution than a service-based SME (Otokiti, Igwe, Ewim, Ibeh, & Sikhakhane-Nwokediegwu, 2022). Consultants focus on understanding the business's core operations to propose energy-efficient technologies that deliver tangible benefits without overburdening the company's finances. This could include recommending smaller-scale renewable energy systems or energy-efficient appliances that align with the business's energy consumption patterns and budge (Apeh *et al*., 2024c; Ayanbode, Abieba, Chukwurah, Ajayi, & Ifesinachi, 2024) t.

Moreover, capacity building is a critical aspect of tailoring solutions for SMEs. Consultants help SMEs improve their understanding of sustainable practices, ensuring that they can independently manage and maintain the technologies adopted. This approach enables SMEs to make informed decisions and implement sustainable practices in a way that fits their internal capabilities (Onukwulu, Fiemotongha, Igwe, & Ewim, 2022). Consultants also assist in navigating financial options, such as identifying financing mechanisms that align with an SME's cash flow, enabling them to afford the transition to sustainable energy without compromising other operational needs. The ability to provide tailored, resource-efficient, and scalable solutions ensures that SMEs can successfully integrate sustainable energy practices and remain competitive in a global economy (Adefila, Ajayi, Toromade, & Sam-Bulya, 2024b; Apeh, Odionu, Bristol-Alagbariya, Okon, & Austin-Gabriel, 2024b).

3.3 Technology integration and innovation

In the context of sustainable energy practices, technology integration is a cornerstone of business consulting. As part of the shift toward sustainable energy practices, consultants facilitate the adoption of cutting-edge technologies that improve energy efficiency and reduce environmental impact (Adebayo, Chukwurah, & Ajayi, 2024). The integration of clean technologies, such as solar photovoltaics, wind turbines, and energy storage systems, plays a crucial role in reducing SMEs' dependence on fossil fuels while improving their long-term sustainability. Business consultants ensure that these technologies are seamlessly integrated into existing business operations, minimizing disruption while maximizing performance (Abbey, Olaleye, Mokogwu, Olufemi-Phillips, & Adewale, 2024).

Consultants also guide SMEs in adopting innovative business models that enable them to stay competitive in a rapidly changing energy landscape. For example, consultants may recommend business models based on energy-as-a-service (EaaS), where SMEs lease or rent energy-efficient equipment instead of purchasing it outright (Adefila, Ajayi, Toromade, & Sam-Bulya, 2024c). This approach reduces upfront costs and allows SMEs to access advanced technologies without the burden of large capital investments. EaaS models provide flexibility, scalability, and long-term savings, making them ideal for SMEs looking to adopt sustainable energy practices with lower financial risk.

Moreover, digital innovations such as smart grids, IoT-based energy management systems, and blockchain for energy transactions offer SMEs new opportunities to optimize energy use, track sustainability efforts, and increase transparency. Consultants help integrate these technologies, ensuring that SMEs can benefit from enhanced energy efficiency, data-driven decision-making, and improved performance monitoring. By adopting such innovations, SMEs can optimize energy consumption, reduce operational costs, and meet environmental sustainability targets more effectively (Adebayo, Ajayi, & Chukwurah, 2024; Adefila, Ajayi, Toromade, & Sam-Bulya, 2024a).

Additionally, consultants support SMEs in navigating the regulatory landscape associated with clean energy. As regulations surrounding renewable energy and emissions become more stringent, consultants help SMEs integrate technologies and business models that ensure compliance with national and international standards. Consultants not only introduce new technologies but also foster a culture of innovation by encouraging SMEs to explore creative solutions that meet regulatory requirements while maximizing profitability. Through technology integration and innovation, business consultants help SMEs stay ahead of market trends and build a sustainable future in the global energy economy (Afolabi, Chukwurah, & Abieba; Alozie, Collins, Abieba, Akerele, & Ajayi, 2024).

4. Implementation challenges and solutions

4.1 Barriers SMEs face in adopting sustainable practices

Small and medium enterprises (SMEs) face a range of challenges when attempting to adopt sustainable energy practices. Financial constraints are perhaps the most significant barrier. Many SMEs operate on tight budgets, and the upfront costs associated with renewable energy solutions—such as the installation of solar panels or energy-efficient technologies—can be prohibitive. This challenge is

exacerbated by the fact that traditional financing avenues often require collateral or a strong financial history, which many SMEs lack. As a result, securing the necessary funds to invest in sustainable energy practices can be an insurmountable obstacle (Ogundeji, Omowole, Adaga, & Sam-Bulya, 2023; Onukwulu, Fiemotongha, Igwe, & Ewim, 2023).

Another challenge SMEs face is the lack of expertise in sustainable energy solutions. SMEs typically do not have the technical knowledge or dedicated teams to assess, install, and maintain renewable energy systems. Without the necessary internal expertise, SMEs may struggle to choose the right technologies or implement them effectively. Furthermore, there is often a knowledge gap regarding the long-term benefits of energy efficiency and sustainability, leading to hesitation or a lack of confidence in adopting such practices (E. K. Jessa, 2023; Myllynen, Kamau, Mustapha, Babatunde, & Adeleye, 2023).

Finally, regulatory hurdles represent a significant barrier. The energy sector is heavily regulated, and navigating complex laws and standards can be overwhelming for SMEs with limited resources. Regulations may vary across regions, and understanding how to comply with environmental laws, obtain certifications, and meet government incentives can be daunting for smaller companies. These barriers combine to make the transition to sustainable energy practices a challenging undertaking for many SMEs (Fiemotongha, Igwe, Ewim, & Onukwulu, 2023; Hassan, Collins, Babatunde, Alabi, & Mustapha, 2023).

4.2 Role of business consultants in overcoming challenges

Business consultants play a critical role in helping SMEs overcome the various challenges they face when adopting sustainable energy practices. One of the most important roles consultants play is in helping SMEs secure funding. Given the financial constraints SMEs face, consultants assist in identifying and accessing a variety of funding sources, including grants, subsidies, and green financing options (Ayanbode *et al*., 2024). Consultants also help SMEs navigate the complexities of blended finance—a combination of public and private funding that reduces investment risk—by designing finance packages that align with an SME's financial position. By securing the necessary capital, business consultants ensure that SMEs can afford the upfront costs of renewable energy solutions (J. O. Basiru, C. L. Ejiofor, E. C. Onukwulu, & R. U. Attah, 2023a).

In addition to financial support, consultants also provide expert advice to bridge the knowledge gap. They offer SMEs access to specialized knowledge in renewable energy technologies, energy management systems, and best practices for sustainability (Chukwurah, Abieba, *et al*., 2024). Consultants can conduct energy audits, help SMEs select appropriate technologies, and design customized sustainability strategies that are tailored to the specific needs of the business. This approach enables SMEs to adopt the right technologies without overburdening their operations or finance (J. O. Basiru, L. Ejiofor, C. Onukwulu, & R. U. Attah, 2023; Daramola, Apeh, Basiru, Onukwulu, & Paul, 2023) s.

Furthermore, business consultants play a key role in navigating the regulatory landscape. They assist SMEs in understanding and complying with local, national, and international environmental regulations. Consultants help SMEs apply for necessary certifications, engage with regulatory bodies, and take advantage of government incentives or tax benefits. By simplifying these processes, consultants ensure that SMEs remain compliant with regulations while minimizing the costs and complexities associated with the legal aspects of sustainable energy adoption (Awoyemi, Attah, Basiru, Leghemo, & Onwuzulike, 2023; J. O. Basiru, C. L. Ejiofor, E. C. Onukwulu, & R. U. Attah, 2023b).

5. Conclusion and Recommendations

This study has highlighted the crucial role that business consulting plays in helping SMEs adopt sustainable energy practices and improve their competitiveness in the global energy economy. Business consultants offer SMEs tailored strategies that address their specific financial, technical, and regulatory challenges, enabling them to integrate renewable energy solutions effectively. The study also found that these consultants provide essential expertise in securing financing, navigating complex regulatory landscapes, and implementing innovative technologies that enhance energy efficiency. Through successful case studies, it was demonstrated that consulting services contribute to both reducing operational costs and improving environmental impact, allowing SMEs to become more competitive in an increasingly sustainability-conscious market. Furthermore, the adoption of sustainable practices not only helps SMEs meet regulatory requirements but also improves their market positioning, attracting eco-conscious consumers and investors. Thus, business consulting serves as a critical enabler of the transition toward sustainable energy practices, driving long-term success for SMEs in the global energy sector.

For SMEs, the key takeaway from this study is that adopting sustainable energy practices requires a strategic approach that combines financial, technical, and regulatory expertise. Business consultants can guide SMEs through this complex process, ensuring they secure necessary funding and comply with regulations. SMEs are encouraged to seek consultants who can tailor solutions to their unique needs, helping them leverage renewable energy technologies effectively. For consultants, the study underscores the growing demand for specialized services in the sustainable energy sector. Consultants can position themselves as valuable partners for SMEs by offering solutions that not only reduce operational costs but also enhance competitiveness. Policymakers play a significant role in creating an enabling environment for SMEs to adopt sustainable practices by introducing supportive policies, financial incentives, and regulations that ease the transition to clean energy. Governments should prioritize the development of frameworks that support SMEs in accessing funding and ensure that regulations encourage innovation while being flexible enough to accommodate the needs of smaller enterprises.

Future research should focus on exploring the evolving role of business consulting as the clean energy landscape continues to shift. One area of interest is the integration of emerging technologies such as artificial intelligence, blockchain, and smart grids into business consulting services. These technologies may offer new opportunities for SMEs to optimize energy use and improve efficiency. Research could also examine how shifting regulatory frameworks impact SMEs' ability to access funding for sustainability initiatives, particularly in regions with rapidly changing energy policies. Furthermore, understanding the specific barriers that SMEs face in different industries and regions could provide insights into how business consultants can better cater to their needs.

Finally, further investigation into the long-term impact of business consulting on SMEs' financial performance and sustainability outcomes would be valuable in assessing the true effectiveness of consulting interventions in the energy sector.

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