Pakistan Journal of Life and Social Sciences
www.pjlss.edu.pk

RESEARCH ARTICLE

Investigating the Expected Impact of Environmental, Social, and Governance (ESG) Principles on Smart-City Management towards Achieving Green Competitive Advantage: A Comparative Future Study between NEOM and Telosa Cities

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ARTICLE INFO	ABSTRACT
	This research aims to investigate the manner through which ESG principles could affect smart-city management approaches in the future if they were to be implemented as a tool that assist these city managers in gaining green competitive advantage in the future. Qualitative design was implemented using content analysis followed by future-studies analysis to analyze two reports released by two smart cities; i.e. NEOM and Telosa. The findings concluded that NEOM has made significant progress in implementing ESG principles within its smart-city management framework, positioning it as a leader in the race for a green competitive advantage. Its slower pace in environmental implementation, coupled with challenges in achieving social integration and fully transparent governance, means that while Telosa holds potential, it faces obstacles that need addressing to catch up with NEOM. Furthermore, future researchers are advised to use quantitative data and implement a descriptive study over other smart cities across the globe than the Kingdom of Saudi Arabia and the United States of America.

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INTRODUCTION

The underpinnings of strategic management approaches within infrastructural contexts and on urban-planning levels have been influenced in the last decades by the constantly-evolving advanced technologies. Accordingly, this notion reflects the modern movement that is directed towards the establishment of smart cities; which refer to urban cities that are planned and managed to provide services using smart technologies that help improve performance, living conditions, infrastructure, sustainability, and municipal services (Alsuba et al., 2024). Such cities utilize advanced technologies including artificial intelligence (AI), robotics, big-data analytics, and internet of things (IoT) (Petrova-Antonova & Ilieva, 2021).

Moreover, the concept of smart cities aims to improve services, quality of life, and welfare for citizens using advanced technologies. Technological development has affected several dimensions of urban mobility, environment, governance, economic activity, and social and cultural life (Muntenescu, 2023). Smart cities are also closely associated with an innovative economy that needs efficient systems and strong protection of intellectual property. They also need good privacy protections, especially in using data and open data, which guarantee the security of personal information through adequate laws and safeguards (Cuong, 2022). However, without the proper level of management, smart cities will face challenges that will hinder its capability of achieving its strategic objectives. For instance, smart cities must prepare and implement urban-planning, capacity, and resources management approaches, and also select innovative solutions to overcome resource-based challenges such as insufficient power and energy outlets (Gade, 2021).

Consequently, such challenges accompanied with the need to enhance their smart-city management frameworks, smart-city managers always strive to gain green competitive advantage; by rationalizing their resources, attracting skilled and socially-intelligent workers and citizens, and diversify their terrestrial funding sources (Sidani et al., 2022). For example, smart-city management approaches could encourage firms and organizations in the city to elevate their social participation and community development in a voluntary manner; which is a direction that can help achieve green competitive advantage for the entire city (Sheykhan et al., 2024). Additionally, an various awards and forms of index have emerged as evidence of the prevalence of such competition amongst smart cities; the most prominent of which is the IESE Cities in Motion Index (IESE Business School, 2024), the Smart City Index issued by Ernst and Young (2022), the Global Smart City issued by Juniper Research (2024), and the Intelligent Community ranking (Intelligent City Forum, 2024).

One of the principles that can assist smart-city managers to achieve strategic green competitive advantage is environment, social, governance (ESG) principles. This is because such principles comprise aspects that can elevate the status of any smart city management frameworks; including social responsibility, corporate governance, and environmental protection (Andrey, 2023). As a result, implementing ESG principles not only helps mitigate and reduce risks but also generates benefits that can enhance long-term profitability (Haryani & Anjani, 2023). Based on the aforementioned, the problem of the current research lies in the competition amongst smart cities and their approaches to gain more momentum compared to other competing cities as the most "green" cities of all other establishments.

Therefore, the current research aims to investigate the manner through which ESG principles could affect smart-city management approaches in the future if they were to be implemented as a tool that assist these city managers in gaining green competitive advantage in the future.

And since the each city could use different modalities to implement these ESG principles, then each city's current smart-city management approaches can be indicative of the direction they could take in the impact of such principles on each management framework as they all strive for gaining green competitive advantage; given the fact that these approaches will be included in the dataset that is meant to be analyzed to envisage their expected strategic directions. Accordingly, the main research questions for the current research can be formulated as follows:

1. What is the current status of the formulation of adapted ESG principles with smart-city management in NEOM and Telosa towards achieving green competitive advantage?
2. What is the expected impact of ESG principles on smart-city management in NEOM and Telosa towards achieving green competitive advantage?

LITERATURE REVIEW:

NEOM city embodies an ambitious initiative aligned with Saudi Arabia's Vision 2030, which is already in the process of realization, emphasizing the development of a smart city. The city employs intelligent technologies to attain sustainability and become an optimal tourist destination (Alatawy, 2024). Neom city in Saudi Arabia is situated at 29° 08′ N and 34° 55′ E. (Salameh et al., 2021). While, Telosa is a proposed city in the USA where commuting to access services will not exceed 15 minutes, and the use of fossil-fuel-powered vehicles will be prohibited in this sustainable city (Almutairi, 2024).

Environmental, Social, and Governance (ESG): ESG represents a significant trend in corporate governance, management, and investment over the last twenty years. It lies at the core of the most significant and contentious discussions in modern corporate and securities law. The acronym ESG, refers to "environmental, social, governance," (Pollman, 2022) . This concept can be defined as follows:

According to Maslak et al., (2022) that Environmental, social, and corporate governance (ESG) constitutes a primary non-financial framework for assessing business sustainability and its social impact, encompassing employee motivation as a form of indirect management achieved through aligning employee interests with specific strategies and methods that foster their engagement in work .

In addition, Chi et al., (2024)Environmental, Social, and Governance is a set of standards used for assessing the impact of an entity on the environment, the people and the systems that manage them, in addition to the organization's sustainability. Environmental aspects are concerned with management processes, use of energy, emission, generation of clean energies, and cyclical activities. Within social aspects are contained the issues of safeguarding workers' rights, working with suppliers, ensuring the safety of consumers and the public, and managing communities. Incorporating on governance addresses such concepts as the structure of the boards, internal mechanisms and independence of audits

ESG Principles: According to Andrey, (2023) ESG principles encompass three primary indicators: Environmental Protection, Social Responsibility, and Corporate Governance. ESG has emerged as a novel metric for assessing business sustainability and will significantly influence investment decisions for investors. They correspondingly encompass:

Environmental Protection (Environment): Denotes the company's initiatives regarding environmental sustainability, encompassing the reduction of carbon emissions and the mitigation of pollution, among other efforts.

Social responsibility: This entails that, alongside profit generation and accountability to shareholders, businesses must also assume responsibility for their employees, society, and the environment. Incorporating: adherence to business ethics, positive employee relations, resource conservation, and conformity with legal and ethical standards in operational activities.

Corporate Governance: Corporate governance pertains to the framework for managing and overseeing a company, along with the process of ensuring accountability among its managers. Besides enhancing the company's efficiency, it safeguards shareholder rights and interests, considers the needs of other stakeholders, promotes information transparency, and meets corporate social responsibilities.

Moreover, according to Grigorevich et al., (2023) A business can only be considered good by ESG indicators if it meets the following criteria:

Environmental – the environmental criterion. Large industrial enterprises that consume resources and throw out waste have a negative impact on nature. Therefore, they should not harm the "green" planet and stop actively polluting it. To meet this criterion, companies should use environmentally friendly materials, recultivate natural resources, invest in environmental technologies, minimize harmful substance emissions, finance charitable environmental projects, minimize waste, and introduce an ecological culture to employees.

Social – the social criterion. Companies should strive to reduce their negative impact on society and make a positive impact. This includes protecting employees' rights, compliance with laws and labor standards, recruitment and training of personnel, attracting employees with disabilities, ensuring industrial safety, monitoring gender equality, and avoiding discrimination.

Governance – the corporate governance criterion. Companies must have competent and responsible management to achieve their intended goals. People are organizers who set long-term goals, develop a consistent process to achieve them, analyze and evaluate the results of work, and use them for the development of the company. Purpose is the principles of organization management, and processes are the process by which people achieve their company's goals. Performance analysis is a key skill in any industry.

ESG, an acronym for environmental, social, and governance, represents a set of criteria. The objective is to assess the sustainability of a company's operations and their impact on the environment, society, and corporate governance. The principal subjects of the environmental indicators encompass the company's environmental management system, energy consumption, pollution, utilization of renewable energy, and implementation of the circular economy. Social indicators evaluate a company's protection of employee rights and interests, supply chain management, consumer protection policies, and relationships with the community and other stakeholders. Governance indicators encompass board composition, internal controls, and audit independence (Chi et al., 2024).

Environmental, social, and governance (ESG) principles have emerged as benchmarks for companies striving for sustainable business practices, considering their effects on the environment, society, and the execution of effective corporate governance. ESG principles are now incorporated into a company's business operations and are no longer optional for implementation (Pratama & Heikal, 2024).

In addition, ESG principles are deemed important as they emphasize not only profit maximization but also the consideration of environmental, social, and governance factors (Dillak & Hapsari, 2024).

Moreover, The ESG concepts are integral in assessing the sustainability of a corporation and its effects on society as a whole. Environmental metrics look at how a company utilizes its resources and manages pollution, thereby encouraging the use of renewable energy and circular economy practices. Social metrics stress the need to address workers' rights, ethical sourcing, and community involvement. Governance metrics evaluate the company leadership and their management through the clarity of the organization. Collectively, these principles foster responsible behaviors of companies towards the environment and the society at large (Andrey, 2023).

Smart-City Management: The development of Smart City management concepts relies on the application and utilization of advanced technologies (Vodák et al., 2021). As urbanization escalates globally, the significance of smart city management is intensifying. Successful implementation necessitates the establishment of technological foundations and, notably, the involvement and engagement of the citizens within the designated "smart city" (SC) (Wirtz et al., 2022) . Smart City management is executed within a multifaceted system comprising numerous stakeholders and domains of urban activity (Turek & Stępniak, 2022). Smart Cities is a strategic management approach aimed at enhancing the quality of life for residents by utilizing modern technology to influence the

city's economic and social goals. The primary objective of SC is to ensure a better quality of life for its residents. In doing that, synergies occur between the various activities and public services that make the city functional - especially transport, logistics, security, energy, management of buildings, etc.

According to Ministry of Regional Development of the Czech Republic, (2018) the term Smart Cities means the concept of strategic management of a city, or municipality or region (for simplicity, hereinafter referred to only as "Smart Cities". The primary objective of SC is to ensure a good quality of life for residents, where modern technology is used as a tool to influence the quality of life in the city and consequently to achieve the city's economic and social goals. At the same time, the Smart Cities concept puts emphasis on both the hard and soft aspects of city life management and on the harmony between the city's "grey" and "green" infrastructure

Moreover, Radziszewska (2023) stated that the notion of smart city management relies on the deployment and utilization of sophisticated technologies, including wireless sensors, autonomous vehicles, mobile networks, and data storage systems. It entails the integration of diverse information and communication technology solutions to effectively manage a city's resources.

According to European commission (2020) Smart cities use information and communication technology (ICT) and other data analyzing methods to manage and improve urban efficiency, environmental sustainability, and citizens' quality of life amongst others. Proper management involves the use of techniques and policies to control a number of elements across dimensions such as government, economy, mobility, environment, society and habitation that are underpinned by technology, people and organizational policies.

Smart Governance: Management of interactions between the government, civil society and the business sector with the help of decision-oriented ICT, enabling all operations in the city to be seamless and efficient.

Smart Economy: Productivity and innovation management in an economy based on the connectivity of the information and communications technological (ICT) infrastructure for businesses and enterprise networks.

Smart Mobility: It is concerned with the application of advanced information and communication technologies (ICT) to the management of transport systems in order to improve logistics, real time operation and sustainable transport while minimising costs and environmental damage.

Smart Environment: Management of renewable energy sources, smart grids, pollution and resource management so as to encourage urban advancements while improving livability.

Smart People: Development of services that enable the growth of human capital and instill a culture of innovation through education, skill acquisition and community participation in order to facilitate growth in the cities.

Smart Living: Managing an ICT inspired way of life with active social and cultural engagement, provision of quality housing, and healthy and secure surroundings for the achievement of enhanced standards of living.

Green Competitive Advantage: According to Wibisono et al., (2023) Green Competitive Advantage refers to a company's unique competitive edge that enhances the value of its products, whether goods or services, through the development and implementation of distinctive environmental practices that are inimitable by competitors. Organizations and companies spearhead environmental management and green innovation through strategic environmental initiatives.

Additionally, Hendratmoko (2023) stated that Green Competitive Advantage (GCA) refers to a firm's possession of multiple positions related to environmental management or green innovation. GCA is

essential for a company to leverage diverse resources to improve performance beyond that of its competitors.

Moreover, Sigit et al., (2024) highlighted that the notion of green competitive advantage delineates the attributes of being non-replicable and attaining a superior status relative to competitors due to the company's commitment to ecological stewardship and sustainable innovation. Smart corporations seek to adopt this ecological initiative to attain environmentally sustainable competitiveness.

Green Competitive Advantage refers to an organization's initiative to enhance Economic Performance while prioritizing environmental sustainability (Eksandy & Arsjah, 2021) .

According to Hendarjanti & Nawangsari (2023) GCA encompasses two dimensions:

low-cost advantage, defined as an organization's capacity to execute product innovation and environmental processes to achieve competitive superiority at minimal costs;

Differentiation advantage, which pertains to the principle of environmental protection.

Sustainable development is transforming society, creating new social patterns, and restructuring business and management models. This has led to a reevaluation of the legal framework, necessitating the adaptation of normative structures to contemporary legal taxonomy. ESG principles have emerged as a framework for sustainable business development, facilitating companies' engagement in addressing environmental, social, and governance challenges. They have regulatory and reputational implications, influencing international business across various industries. ESG principles are often disjointed and fragmented, but they are analogous to law in their influence on public relations and ensuing legal and economic ramifications (Mazhorina, 2022).

Cities worldwide face environmental and urbanization challenges, including aging infrastructure, global competition, and limited financial resources. While global warming and climate change dominate policy agendas, reducing carbon footprint is crucial. This leads to increased demand for clean water, electricity, homes, efficient transport, and city services like health, education, and public safety. The smart city concept arises from a harmonious integration of technological, human, and social elements, indicating a more innovative approach (Alshahadeh & Marsap, 2018).

A "smart city" is a system that optimizes the utilization of city service resources while ensuring the highest level of urban safety. This city continuously enhances the quantity and quality of services for its residents, while maintaining environmental sustainability to promote comfort and improve the quality of life through enhanced ecological resilience (Zvereva et al., 2021). Through Green Competitive Advantage the company's competitors frequently fail to replicate the environmental strategies employed, resulting in the attainment of sustainable objectives and advantages (Panjaitan et al., 2024).

The implementation of Environmental, Social, and Governance (ESG) principles is key in the management of smart cities as it propels the cities towards having a green competitive advantage. Urban centers are the main contributors of global carbon emission and therefore the adoption of the ESG framework enables the cities to tackle climate issues that impact the environment – net zero emissions of carbon, adoption of clean energy, in adequate waste management, and mitigation of pollution. Moreover, smart technologies such as digital twins and blockchain allow even further advancement toward these goals by monitoring and optimizing energy consumption and emissions while the process is ongoing. Moreover, beyond the environmental aspect, the ESG principles are aimed at promoting social capital and inclusion so that all residents have access to essential services. Where these principles are applied in the management of cities, the degree of transparency, accountability and resilience of the cities will increase making sustainable urban development

attractive to them in meeting the global calls for sustainability such as the UN Sustainable Development Goals (World Economic Forum, 2024).

Based on the above, it can be concluded that sustainable development principles are transforming societal contexts and business practices, necessitating an understanding of modern legal structures. Environmental, Social, and Governance (ESG) criteria are crucial sustainable business practices in international corporate and regulatory environments. ESG principles are visible. Cities worldwide face challenges like poor infrastructure, high population density, and climate change, necessitating a focus on carbon emissions and basic services like clean water, energy, and security. A smart city effectively utilizes technology, humans, and social practices to manage resources, improve services, protect the environment, and improve the quality of life for its inhabitants. Thus, Green Competitive Advantage allows companies to achieve green objectives due to unique environmental strategies that are difficult to rival, ultimately promoting sustainability in city management.

METHODOLOGY:

The current research uses qualitative design as the main methodological selection of the research, and it will be mainly divided into two methodological sections. Consequently, the first methodological section of the research will utilize content analysis as a data-analysis instrument through the utilization of official reports about NEOM and Telosa, which will be used as the main sample for the current study. Moreover, the content analysis method will rely on the Hsieh and Shannon (2005) method of conventional content analysis.

This method in particular is considered effective enough for the current research thanks to the fact that it extracts themes from the reports and compares them with the ESG principles that are currently present or in effect within both smart-city management frameworks for both cities; in order to use the findings as reference points for the second methodological section.

The second methodological section will utilize the Voros (2017) scope which uses current analysis of NEOM and Telosa as foundational information upon which (6) different scenarios can be estimated as situations that are expected to happen with varying degrees of viability for both city; in order to formulate the appropriate set of strategic activities that serve as recommendations for the development of smart-city management approaches based on ESG principles towards assisting each smart city in achieving green competitive advantage respectively.

It is worth noting that selecting NEOM (2024) and Telosa (2024) smart cities to be compared with one another in a strategic manner for this research was made in accordance with the prominence of both cities stand out as the most visionary smart-city projects underway that will redefine urban living with sustainability, innovation, and advanced technologies. NEOM, in Saudi Arabia, has been tailored around the axis of renewable energy, AI-driven solutions, and futuristic infrastructure in line with the creation of a carbon-neutral megacity. On the other hand, Telosa, a proposed city in America, aims at sustainable urban development, community welfare, equitable resource distribution, and green technologies. Both these projects are global benchmarks in the integration of ESG principles into smart-city planning—hence ideal for a case study on the future of sustainable city management.

First Methodological Section: Conventional Content Analysis: The following step uses two major reports as primary data sources- NEOM's "Social Responsibility Report", and Telosa's "Guidebook to Measure Community Connections"; both released in 2023 and 2024 respectively. Accordingly, the first step in the conventional content analysis procedure revolves around being mindful of and familiar with the data contained within each report. Therefore, upon reviewing both reports, it has been concluded that:

NEOM's and Telosa's management boards included information about the community they strive to establish in their cities.

Both reports clarified their vision and strategic objectives that are meant to distinguish them in the market.

The inclusion of social, environmental, economic, and governance-oriented underpinnings and criteria was evident.

Secondly, the relevant strands of data and body of content within both reports must be interpreted into codes; in order to handle the large amount of data contained in each report without having to analyze the entire text but rather by analyzing compendiously-formulated phrases that reflect the gist of each body of text. Consequently, this step helped generate the following codes:

Codes Generated from NEOM's Report	Codes Generated from Telosa's Report
Sustainable future, inclusive future, social responsibility, utilizing partnerships, empowering communities, empowering individuals, economic diversification, long-term values, human-centric approach, positive change, strategic partnerships, community participation, meaningful impact, sustainable practices, addressing stakeholder values, socio-economic engagement, elevating quality of life, responsible communities	Social belonging, equity and inclusion, civic participation, social engagement, strong institutions, community dialogue, welcoming diverse populations, establishing unity, addressing systemic inequality, anti-discrimination measures, affordable housing policies, fair labor practices, investment in education, support for marginalized groups, strengthening social services, volunteerism, neighborhood cleanups, creating public spaces, cultural exchange, transparent governance

The third step is to transform these codes into themes to handle them even in a more compendious manner; provided that each theme must be reflective of a number of similar or identical codes in terms of meanings and approaches. Therefore, the following themes have been generated by re-arranging each set of similar codes to assign a reflective theme to it:

| Themes Generated from NEOM's Report	Themes Generated from Telosa's Report
Sustainability and Inclusive Development	Community Empowerment and Engagement
Community Empowerment and Collaboration	Equity and Social Justice
Strategic Values and Long-Term Growth	Inclusive Development and Governance

The fourth step is to review the themes to either remove or merge some of them in further compendiously-reflective themes. And in this case, the previously-generated themes should remain intact without changing them or re-formulating their structure. Moving forward, the fifth step prompts me to name and define the themes. In this case, I shall prepare the themes to be used for conducting the comparison between the two smart cities. First, the themes will be re-named to have a more comprehensive approach as follows:

Themes Generated from NEOM's Report	Themes Generated from Telosa's Report
Green Approach	Social Responsibility
Social Responsibility	Equity and Social Justice
Strategic Vision	Green Governance

Next, the previously-prepared themes can be defined before implementing the final step in the first methodological section; i.e. the comparison phase. Such definitions can be provided as follows:

Themes Generated from NEOM's Report	
Green Approach	That is what inclusive and supportive of the environment, economy, and society would really mean in the long run. These concepts emphasize resource management, equal opportunities, and improved standards of community living as a means of establishing responsible and sustainable development
Social Responsibility	It helps people and communities take part in shaping their futures, by using partnerships and encouraging teamwork to support projects that create real change. It will illustrate how important shared ownership, strategic partnerships, and collaboration are in making a big difference in society
Strategic Vision	This theme has brought into light the need to consider what's important to stakeholders, creating different economic opportunities and carrying out plans that bring good results for both communities and organizations. The theme brings together ethical ideas, modern strategies and approaches focusing on people in an attempt to promote lasting economic and social growth
Themes Generated from Telosa's Report	
Social Responsibility	Includes developing active participation, cooperation, and ownership among communities through the promotion of civic engagement, social interaction, and volunteerism; developing opportunities for discussion, promoting unity, and events such as neighborhood cleanups to create strong, cohesive, and resilient communities
Equity and Social Justice	Focuses on making sure everyone is treated fairly, equally, and with respect by dealing with unfair systems, getting rid of discrimination, and supporting inclusive policies. This theme emphasizes important actions like fair labor standards, affordable housing, and special support for marginalized groups to build a fairer and more equal society
Green Governance	It is an attempt at inclusiveness in city planning and governance, ensuring that all community members feel a sense of belonging. This includes welcoming diversities of culture, investing in education, increasing social services, creating public spaces for people to interact, promoting cultural exchange, and maintaining accountability in the decision-making process

Second Methodological Section: Future Analysis: The following future analysis can help use the aforementioned information and the previously-extracted findings from the conventional content analysis process to estimate the probable future of ESG principles impacting NEOM's and Telosa's smart-city management approaches towards achieving green competitive advantage. In order to conduct this, the Voros scope is going to be utilized based on the current status for both cities as follows:
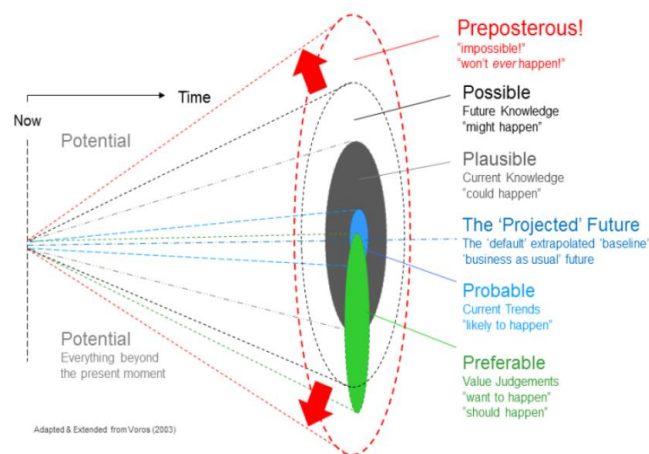
The Preposterous Future: The most unlikely situation to occur for NEOM and Telosa is a complete environmental collapse that leads to the failure of the two projects. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Activating and strengthening risk management frameworks Enhancing social safety nets beforehand	Building adaptive infrastructure Establishing financial planning and economic resilience

The Possible Future: For NEOM, it is possible that the city reaches partial achievement of sustainability objectives, and for Telosa it is also possible for them to reach partial success especially in the circular-economy model. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Enhancing renewable energy systems with a focus on scalability Addressing social equity issues by integrating community-led initiatives	Introducing more inclusive governance frameworks to ensure diverse representation

The Plausible Future: First of all, it is plausible for NEOM to become a global leader in the domain of green and smart cities but not without facing a few challenges. For Telosa, it is plausible for the city to gain traction towards ESG balance. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Strengthening social inclusion initiatives through targeted education and healthcare investments Focusing on building resilient, adaptive governance structures that can quickly adjust to changes	Increase community participation in governance to improve decision-making and inclusivity Accelerate partnerships with sustainability-focused organizations to enhance social responsibility

The Projected Future: It is projected for both NEOM and Telosa to remain two advanced smart cities with the need for NEOM to focus on the development of the governance facet, while Telosa would have to focus on the environmental facet. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Increasing the use of artificial intelligence and machine learning in governance and resource management	Developing city policies to focus on long-term social equity and environmental protection

The Probable Future: It is probable for NEOM to continue as a global leader in sustainable innovation, but must continuously adapt governance and social structures, while Telosa might stay a moderately-advanced smart city. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Building stronger community partnerships to ensure that all social groups benefit from the city's growth Enhancing education and training programs to cultivate a skilled workforce aligned with sustainability goals	Addressing local governance challenges by establishing civic participation through digital platforms Ensuring equitable access to social services, focusing on marginalized groups to reduce inequality

The Preferable Future: The preferable future is for both cities to collaborate and maybe participate in the establishment of a third integrative city. Accordingly, this form of future can be addressed by NEOM and Telosa smart-city management team as follows:

Management Strategies for NEOM	Management Strategies for Telosa
Expanding cross-sector partnerships between cities to achieve holistic sustainability across all areas of city life	Focusing on providing joint-training and education programs, workshops, and comprehensive development initiatives

Based on the previously-conducted future analysis, and based on the estimations and the forms of future projected for each smart city, it can be concluded that NEOM is the most city that is considered the closest to being capable of gaining green competitive advantage in the future by capitalizing the impact of all ESG principles on its smart-city management framework.

FINDINGS AND DISCUSSION:

Based on the aforementioned analysis, and in accordance with the ESG principles that has been outlined in the literature review, the following comparison between NEOM and Telosa can be conducted towards answering the first research question:

Answering the First Research Question- What is the current status of the formulation of adapted ESG principles with smart-city management in NEOM and Telosa towards achieving green competitive advantage?

ESG Principles	NEOM	Telosa
Environmental Principle	NEOM is committed to environmental sustainability, with activities that include renewable energy, technologies with zero emissions, and a resource-efficient approach to urban design. Some outstanding examples are: The Line, green hydrogen projects, sustainable building practices	It also focuses on sustainability through a circular economy model, renewable energy, sustainable water management, and eco-friendly transportation. Salient features include photovoltaic roofs and aeroponic farming
Social Principle	NEOM focuses on social inclusivity of inequity, health, education, and affordable housing. The city focuses on community participation and empowering the marginalized to thrive	Telosa uplifts equity by offering each resident a stake in the land- a sure way of guaranteeing shared economic benefit. Its social model provides for affordable housing to support marginalized communities and creates public spaces that allow residents to come together in social cohesion
Governance Principle	The governance of NEOM is based on transparency, accountability, and civic engagement. It underlines strong institutions that encourage grass-roots involvement in decision-making processes	Governance in Telosa is at the forefront of inclusivity and participation. This city is ensuring long-term sustainability through transparent, responsive governance that enshrines equity

Therefore, to answer the first research question, it can be concluded that in the formulation of adapted ESG principles within smart-city management, NEOM currently outpaces Telosa in achieving a green competitive advantage. NEOM is more advanced in its implementation, especially with its ambitious projects like The Line, and a focus on sustainable technologies like green hydrogen and zero-emission infrastructure. The city's design roots are laid on state-of-the-art renewable energy

systems and resource-efficient urban planning, placing it at the front in terms of sustainable urban development worldwide.

Additionally, Telosa is at the very earliest stages of implementation. With its circular economy model, sustainability, and equitability in governance, it seems promising, but it had not achieved the same level of execution as NEOM. The designs for Telosa include sustainable urban infrastructure such as renewable energy usage and eco-friendly transportation, showcasing its adherence to ESG principles, but these projects are considerably more conceptual when compared to the already functioning strategies of NEOM.

Answering the Second Research Question- What is the expected impact of ESG principles on smart-city management in NEOM and Telosa towards achieving green competitive advantage?

The integration of ESG principles in smart-city management is poised to greatly influence the long-term success of both NEOM and Telosa in gaining a green competitive advantage. NEOM, envisioning very ambitious goals pertaining to environmental sustainability, has already started to set examples in environmental innovation by promising the use of renewable energy, green technology, and circular economy practices.

Moreover, the city's environmental principle targets a completely integrated smart infrastructure with zero-emission transportation and energy-efficient buildings, meeting international standard levels on sustainability. Socially, NEOM aims at being inclusive and engaging the community; its governance strategy also sets up the model of transparency and accountability.

These ESG initiatives will indeed help establish NEOM's potential as a green city model, although challenges are yet to be fully met regarding the continuity of social equity and improvement of governance frameworks for long-term inclusivity and transparency. While Telosa is specifically focused on building an equitable and sustainable future, especially regarding its commitment to fair labor, affordable housing policy, and social welfare, the city has made some overtures to embedding circular economy practices within its operations for zero waste and sustainable resource use.

However, the city still faces some degree of challenges to achieve full social integration and completely transparent governance systems. In this regard, as Telosa is still in its development stages, the environmental, social, and governance initiatives will require reinforcement through increased investments in clean energy and social infrastructure to appropriately provide a fully balanced and resilient city framework. While Telosa has a very inclusive style of governance and social justice, scaling its environmental efforts to match ambitions at NEOM will be the most critical challenge in securing its green competitive advantage.

Considering the pace at which it currently moves and strategies put in place, NEOM would seem more likely to achieve a green competitive advantage in the future by capitalizing on all ESG principles. With continuous investment by the city in renewable energy, smart infrastructure, and governance reforms, it is leading the race in sustainability and social equity. Although Telosa still holds much potential, its slower pace compared to NEOM-in implementing its full ESG framework-means it has several drawbacks in terms of governance and social inclusivity. However, the strengths of both cities can be utilized to further develop each city's ESG framework, and both can make significant strides toward a green competitive advantage.

CONCLUSION:

The rationale of the current research is considered strategic in nature; which envisages the future and places emphasis on the developmental advances that could occur in accordance with the current foundational approaches. Firstly, my approach was to determine the degree of ESG principles implementation and how they could have an impact on smart-city management approaches in the

future if they were to be implemented as a tool that assist NEOM and Telosa's city managers in gaining green competitive advantage in the future.

The findings indicate that NEOM has made significant progress in implementing ESG principles within its smart-city management framework, positioning it as a leader in the race for a green competitive advantage. NEOM is already demonstrating environmental innovation. Additionally, the city's focus on social inclusivity, affordable housing, and transparent governance further strengthens its potential to capitalize on ESG principles. However, challenges remain in ensuring long-term social equity and improving governance frameworks, which will be crucial for maintaining its green competitive advantage.

Additionally, Telosa, while still in its developmental stages and compared to NEOM, its ESG initiatives are still in conceptual phases, with many projects not yet fully executed. Its slower pace in environmental implementation, coupled with challenges in achieving social integration and fully transparent governance, means that while Telosa holds potential, it faces obstacles that need addressing to catch up with NEOM. Both cities, however, offer valuable insights into how smart cities can utilize ESG principles to secure long-term sustainability, with NEOM currently leading in the execution of these principles toward achieving a green competitive advantage.

Consequently, the current research was limited in analyzing qualitative data from the reports of two smart cities; i.e. NEOM and Telosa. Therefore, future researchers are advised to use quantitative data and implement a descriptive study over other smart cities across the globe than the Kingdom of Saudi Arabia and the United States of America.

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