Creative Economy and Sustainable Development in Developing Economies: Comparative Evaluation of China and United Arab Emirates

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ABSTRACT

Sustainable development paradigms need to change along with the economy of the world's most industrialized nations. It has broad applicability because it seeks to resolve problems in the economy and environment, as well as between present and future requirements. We focus on the unique needs of developing creative sectors and economies, which present specific challenges for sustainable growth. This study aims to explore the link between nations' attainment of the Sustainable Development Goals and the expansion of their creative economy. It analyzes sustainability and creativity indices using actual data, along with case studies of China and the United Arab Emirates. According to the analysis, China is leading the world in the growth of its creative economy and creativity metrics. The statistics of China and the United Arab Emirates indicate a level of parity between the two nations in terms of sustainability. The results demonstrate that while China is at the forefront of developing a creative economy, both countries achieve similar levels of sustainability through different approaches. These findings have policy implications.

Keywords: Innovative economy, innovative goods, innovative services, sustainable development, sustainability indexes, area development.

1. Introduction

Sustainable development paradigms need to evolve alongside the economies of the world's most industrialized nations. Although the term "sustainable development" has been interpreted in various ways over the years, its origins date back to the 1970s (Romer, 1986; Satterthwaite, 2010). As it aims to address challenges in the economy and environment, as well as the balance between present and future needs, its applicability is broad. The concept of sustainable growth encompasses the intersection of the environment, society, and economy, focusing on achieving a balance between development, equity, and environmental protection. However, advocates differ in their emphasis on what should be developed, what should be sustained, how to connect environmental and developmental goals, and the timeline for these initiatives.

We focus on the unique needs of developing creative sectors and economies, which present specific challenges for sustainable growth. The innovation economy is driven by information and communication technology and relies more on intellectual capital than physical capital. The broad and cost-effective capabilities of digital technology are highly beneficial to this sector. The innovation economy is characterized by an increasing demand for continuous communication between producers and consumers, as well as a reliance on information for content creation. To recognize the importance of creative industries in sustainable development, the United Nations established the Sustainable Development Goals (SDG) Fund.

Despite the significance of the creative industries in economic studies and regional development (Iammarino et al., 2017; Daley, 2001), there have been few regional studies that explicitly address the sustainable development of creative economies. This article aims to close this gap by analyzing the financial benefits of the creative industries in the context of sustainable development. According to Soini and Dessein (2016), the creative industries play a pivotal role in several aspects of sustainable development by fostering inclusive social development, encouraging personal accountability for progress, and nurturing innovations essential for sustainability. Manioudis and Meramveliotakis (2022) also emphasize the critical role of creative industries in promoting sustainable consumption and production patterns and enhancing regional sustainable development. The innovation economy supports a non-intensive economic model that prioritizes resource management and economic sustainability, thereby highlighting the relationship between innovation and sustainable development.

Understanding the connection between sustainable development, creative efforts, and economic activity is crucial, even though these concepts may sometimes seem counterintuitive or incompatible. This complexity is reflected in the numerous strategies and policies represented in sustainability and innovation economy indices. While many scholars agree that creativity contributes to inclusive social development and sustainable growth, there is a lack of empirical data to support this. This paper seeks to bridge this knowledge gap by offering insights into the relationship between creativity and sustainability, while addressing the inconsistencies in their evaluations. We begin with an overview of the existing research, followed by an analysis of key issues, a comparison of sustainability and creativity indices, and the presentation of an empirical study.

2. Literature Review

Moh et al. (2024) used a literature research approach to identify three key strategies for empowering the creative economy: education and training focused on creativity and innovation, infrastructure and ecosystem development to foster collaboration among creative economy actors, and leveraging technology and digital platforms to enhance market access. These strategies integrate sustainable development principles to achieve broader societal and environmental benefits. In a similar literature review, Wibowo et al. (2024) highlighted the opportunities and challenges in implementing digital transformation policies, stressing the importance of adapting to local contexts and improving technological accessibility and infrastructure. Several significant studies have explored the effects of the innovation economy on sustainable development. Galazova (2016) argues that while markets for innovative products often benefit large capital, which can expand production using new technology, small enterprises are the primary drivers of creative output. To strengthen creativity's role in sustainable urban and regional development, scholars emphasize the importance of local and regional policy. In contrast, locally generated innovative ideas and cultural traits are essential for implementing sustainable initiatives (Rodrigues & Franco, 2019).

Wu and Lin (2020) examine the key factors in fostering culture and Creative and Cultural Industries (CCIs) from the perspective of municipal governments. Their study integrates gray relational analysis and entropy weight into an evaluation indicator system that accounts for complexity and ambiguity. The findings suggest that, compared to cities in the western region, those in the eastern region and offshore islands have effectively leveraged investments in cultural resources. Evaluating sustainable development is crucial in the broader initiative to tackle climate change. Statistical data shows that the creative economy's contribution to the GDP of developed nations is steadily increasing, highlighting the need to assess the impact of local governments on the sustainability of the creative economy (Fazlagić and Skikiewicz, 2019). Khussainova et al. (2024) confirm that transforming the information society and developing the creative economy can reduce social exclusion risks for youth and older people, creating new opportunities and fostering solidarity for sustainable development. Kichurchak (2023) examined key trends and contributions of the Information and Communication Sector (ICS), using economic indicators and regional specialization indices, and

presented a model of ICS functioning across Ukrainian regions, demonstrating the sector's resilience and gradual transformation despite wartime challenges. Yan and Liu (2023) developed cultural impact indicators and a governance framework for the creative economy, demonstrating how humanistic approaches enhance the effectiveness of cultural policies and support the sustainability of creative industries. Manioudis and Angelakis (2023) explored how the creative economy supports sustainable development and regional growth in Attica through smart specialization, focusing on the entrepreneurial discovery process (EDP). They emphasize the importance of structured smart specialization strategies and inclusive innovation ecosystems in fostering effective regional development.

In a case study of the Baltic States, Štreimikienė and Kacerauskas (2020) examined sustainability and creativity indices to explore the connections between the growth of the innovation economy and the realization of sustainable development goals. The primary goal of Creative and Cultural Industries (CCIs) is to advance cities globally, attract capital, and improve the standard of living for the creative class (Bayliss, 2007). These sectors, deeply embedded in the community, can help rural areas diversify economically by employing smart and sustainable strategies, such as commercializing art, history, and traditions (Cooke & Propris, 2011). According to Howkins (2001), innovation fosters sustainable economic development and forms the foundation of the creative economy, focusing on novel concepts rather than extracting limited conventional resources. Social sustainability is a key component of sustainable development. The creative and cultural sectors are closely tied to economic sustainability, as creativity plays a significant role in urban economic growth. Consequently, policies that promote innovation are crucial for the long-term viability of cities and regions. The expansion of the creative sectors in the European Union is tracked by the European Creativity Index. Recent efforts to establish creativity indexes, such as the Cultural and Creative Industries Index (CCII) by Kregzdaite et al. (2020), provide key indicators of the CCIs, including the volume of works created and the financial expression of artistic abilities. These indexes assess the creative industries by considering various elements, incorporating both input and output variables, rather than focusing exclusively on activities within culture and creativity.

In the following section, we will collect empirical data on the key creativity and sustainability indices for China and the United Arab Emirates (UAE). Additionally, we will rank these two countries based on their sustainability indices.

3. Evaluating the Creative Economy

Creative industries are among the most dynamic sectors in the global economy. UNESCO places significant emphasis on cultural activities, with its 2009 framework for cultural data serving as the primary reference for measuring the cultural economy (UNESCO, 2009). However, there is no universal method for evaluating an innovation-driven economy, nor is there a one-size-fits-all model for creative enterprises. Given that each country has unique industries, products, and services within its creative sector, it is essential for nations to adopt strategies tailored to their specific economic environment. It is critical for countries to identify the various creative industries within their economies and then systematically collect, organize, and assess data related to these businesses.

Creative goods include arts and crafts, audiovisuals, design, digital media, performing arts, publishing, and visual arts.

Creative services include a wide range of activities, such as research and development services, software licensing and services, audiovisual licensing and services, information services, marketing and promotional services, architectural design, as well as cultural, leisure, and heritage services.

Figure 1 illustrates the key stages of this process. These stages include setting objectives, engaging relevant stakeholders, conceptualizing and defining the scope of the creative industries, identifying measurement

parameters (such as GDP contribution, employment in the creative industries, and exports of innovative products and services), identifying available information sources, data collection, analyzing both quantitative and qualitative data, and evaluating the results.

Figure 1: Broad Framework for Assessing a Nation's Innovation Economy (Source: UNCTAD)

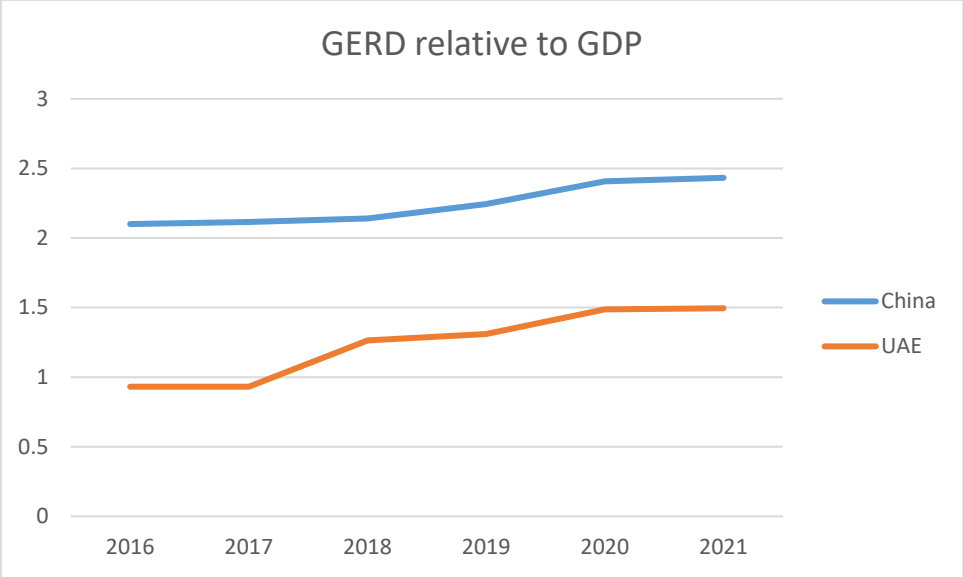

Figure 2: GERD relative to GDP (Source: data.uis.unesco.org)

The lack of standardized definitions and comparable data makes it challenging to make cross-national comparisons of creative industry statistics. Exports of innovative services significantly surpass those of creative products, although both contribute considerably to national economies. In 2020, international exports of innovative services amounted to $1.1 trillion, compared to $524 billion for creative products. Culture and creativity sectors have a global economic impact, accounting for 3.1% of global GDP. According to UNCTAD, the share of innovative products and services in total global exports in 2020 was 21% and 3%, respectively. Moreover, these industries represent 6.2% of total global employment, providing nearly 50 million jobs, with a higher concentration of workers aged 15 to 29 compared to any other sector. The innovation economy promotes social integration, cultural pluralism, and the enhancement of human capabilities, positioning creative industries as crucial for achieving the goals set out in the 2030 Agenda for Sustainable Development.

GERD, relative to GDP, represents the total funds allocated to research and development activities conducted internally within an organization or country during a specific time frame, expressed as a percentage of GDP. Between 2016 and 2021, both China and the UAE demonstrated an upward trend in GERD, with China showing a significantly higher multiplier effect compared to the UAE. During this period, China's GERD reached 2.43% of GDP, while the UAE's GERD stood at 1.50%, as illustrated in Figure 2.

4. Sustainability Indexes

Assessing sustainability becomes an increasingly complex task as it must encompass three interconnected dimensions: economic, social, and environmental. A key focus of the research was to develop an aggregated sustainability assessment indicator that could capture the most crucial aspects of sustainable development (SD). The main integrated indicators of SD include the Environmental Sustainability Index (ESI), Environmental Performance Index (EPI), Ecological Footprint, Happy Planet Index (HPI), Global Sustainable Competitiveness Index (GSCI), Sustainable Society Index (SSI), and the Sustainable Development Goals (SDG) index.

The Ecological Footprint (EF) measures a country's resource consumption and waste generation by assessing the biologically productive land and water required to sustain its population. The Environmental Sustainability Index (ESI) evaluates natural resources, pollution levels, environmental management efforts, and a country's capacity to achieve improved environmental performance, with higher scores indicating better environmental stewardship. The Environmental Performance Index (EPI) focuses on reducing the negative environmental impact on human health, ensuring ecosystem vitality, and the proper management of natural resources, with higher scores reflecting better environmental performance.

The Happy Planet Index (HPI), developed by the New Economic Foundation, evaluates the happiness of a country's inhabitants, with higher scores indicating better performance.

The Global Sustainable Competitiveness Index (GSCI) evaluates a country's competitiveness using five key indices: Resource Management, Ecosystem Resources, Community Resources, Knowledge Assets, and Government Efficiency.

The Sustainable Society Index (SSI) assesses human capabilities, economic welfare, and environmental well-being, aggregating scores into three dimensions: Human, Environmental, and Economic well-being.

The Sustainable Development Goals (SDG) Index, developed by the Sustainable Development Solutions Network (SDSN), evaluates a country's performance by averaging its scores across all SDGs. Although the SDG Index is comprehensive and incorporates weighting factors for each SDG, the number of indicators considered can influence the goals and measures originally outlined by the SDGs. As a result, the evaluation of SDGs may vary significantly depending on whether the measures are weighted.

We analyzed the innovation economy and sustainability metrics, conducting a comparative evaluation of China and the UAE based on their rankings across various sustainability indices. Data on creativity and sustainability indices were collected and compared for both countries using dashboard reports and other online resources.

5. Research Analysis and Results

A comparative evaluation of China and the UAE was conducted based on creativity and sustainability indices. Data on both creativity and sustainability metrics were collected and analyzed for these two countries.

Main Exporters. Despite the exceptional circumstances of the COVID-19 pandemic in 2020, there were no significant changes in the list of the top ten exporters compared to previous years. China maintained its position as the leading exporter of creative products, with exports totaling $169 billion in 2020. Collectively, the top ten exporters accounted for 68.2% of global creative product exports. Interestingly, the UAE dropped out of the top ten list during this period.

Commerce in Innovative Products. Since 2011, emerging economies have consistently outpaced developed economies in the export of creative products. Moreover, a small group of economies collectively contributes to a majority share of global creative product exports, making up approximately two-thirds of the total. In 2020, China emerged as the leading exporter of creative products, with exports totaling $169.309 billion, while the UAE exported $9.219 billion worth of creative products. China's share of global creative product exports accounted for 32.3%, whereas the UAE contributed 1.8%. Additionally, creative products comprised 6.5% of China's total exports and 2.8% of the United Arab Emirates' total exports.

Trade in Innovative Services. Developed countries have consistently dominated the export of creative services, accounting for 82.3% of all exports of innovative services in 2020. However, the gap between developed and developing nations has gradually narrowed over the past decade. In 2020, the USA emerged as the leading exporter of innovative services, with exports totaling $206 billion, while China and the UAE exported $58.826 billion and $5.942 billion, respectively. China's share of global innovative services exports was 5.5%, while the UAE contributed 0.6%. Furthermore, innovative services represented 21.0% of China's total exports and 9.6% of the United Arab Emirates' total exports.

Table 1: Products and services of creativity exporters (2020), (Source: UNCTAD)

Emerging economies	Exports of creative products ($ million)	Exports of creative services ($ million)	Proportion of global exports of creative products (Proportion)	Proportion of global innovative services exports (Proportion)	The proportion of creative products in the country's total exports (Proportion)	The proportion of innovative services in the country's total exports (Proportion)
China	169,309	58,826	32.3	5.5	6.5	21.0
UAE	9,219	5,942	1.8	0.6	2.8	9.6

Barriers to Trade in Innovative Services. The lack of essential skills and infrastructure can hinder emerging nations from becoming competitive participants in innovative services. Leading exporters of innovative services, whether industrialized or emerging economies, demonstrate strong performance in indices assessing workforce assets, growth, and capabilities. Additionally, these countries have a robust technological foundation, as highlighted by the UNCTAD (B2C) Electronic-commerce metrics.

Among the top innovative services exporting economies, Ireland stands out with the largest proportion of innovative services, accounting for 66.1% of the country's total services exports. Meanwhile, China and the UAE recorded percentages of 21.0% and 9.6%, respectively.

Studies on international trade in services have highlighted the positive impact of reduced barriers to service access on the overall efficiency and effectiveness of service sectors within an economy. Sectors with lower trading costs typically exhibit higher productivity and experience greater productivity growth compared to those facing higher trading expenses (Miroudot et al., 2013). Restrictions on services trade have been shown to negatively affect performance across key service sectors, as reflected by consistent metrics across various countries (WTO, 2020b).

Table 2: Human Abilities and Electronic Commerce Metrics in Economies Exporting Services of Creativity (Source: UNCTAD)

Emerging economies	Proportion of innovative services in the total services exports of the nation (Proportion)	Skills		Infrastructure			
		Human Capital Index of the World Bank (value, 2020)	Average years of education (2019)	The proportion of individuals who use the Internet (Proportion, 2019 or latest)	The proportion of individuals with an account (Proportion, 2017)	UNCTAD Index for B2C E-commerce (Ranking, 2020)	UNCTAD Index for B2C E-commerce (value, 2020)
China	21.0	0.7	8.1	61	80	55	70.1
UAE	9.6	0.7	12.1	99	88	37	78.2

Main Importers. The world's leading nations importing creative products account for nearly two-thirds (63%) of global imports in this category. In 2020, Hong Kong SAR was the largest importer of creative products by a significant margin, with imports totaling $30.493 billion, followed by China and the UAE with imports of $19.937 billion and $10.481 billion, respectively. China accounted for 4.3% of global imports of creative products, while the UAE contributed 2.2%. Furthermore, innovative services made up 1.0% of China's total imports and 4.2% of the United Arab Emirates' total imports.

Table 3: Products of Creativity Importers (2020), (Source: UNCTAD)

Emerging economies	Nations importing creative products ($ million)	Global Contributions: Nations importing creative products (Proportion)	Quota products of creativity from the nation's total importers (Proportion)
China	19,937	4.3	1.0
UAE	10,481	2.2	4.2

The Ranking of China and the UAE Based on Sustainability Indexes. In Tables 4, 5, and 6, the rankings of China and the UAE across various sustainability indices show conflicting results. This discrepancy can be attributed to the exclusion of key indicators that represent all pillars of sustainability in existing global aggregate indices, which leads to a bias toward certain dimensions.

Table 4: Ranking-Based Sustainability Indices - International Sustainable Competitiveness Index (Source: SolAbility Sustainable Intelligence)

Country	EPI (2022)		Environmental Health		Ecosystem Vitality		Climate Change	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
China	28.4	160	32.8	107	24.5	169	30.4	128
UAE	52.4	39	49.4	55	70.4	3	34	117

Consequently, the undervaluation of specific sustainability dimensions—whether economic, social, or environmental—impedes a comprehensive understanding of sustainability assessments. Furthermore, the

strong correlation between the main sustainability assessment indices and a country's level of development adds complexity to the interpretation of the results.

Table 5: Ranking-Based Sustainability Indices - Ecological Footprint (gha) in 2019 and HPI in 2019 (Source: Global Footprint Network National Accounts 2020 - A global index of sustainable well-being)

Country	Ecological Footprint (gha) 2019	HPI (2019)	
		Score	Rank
China	3.74	41.9	94
UAE	8.94	34.3	135

Table 6: Ranking-Based Sustainability Indices - Environmental Performance Index (2022), (Source: Environmental Performance Index 2022)

Country	Sustainable Competitiveness		Natural capital		Resource Intensity	
	Rank	Score	Rank	Score	Rank	Score
China	30	51.0	116	40.6	141	34.8
UAE	84	43.2	161	34.3	176	26.1

Table 7: Ranking-Based Sustainability Indices - Environmental Performance Index (2022), (Source: Environmental Performance Index 2022)

Country	Social capital		Intellectual capital		Economic Sustainability		Governance	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
China	47	51.4	3	68.8	11	52.0	51	58.5
UAE	24	57.0	60	43.1	110	39.7	44	59.3

Table 8 provides a summary of the rankings of China and the UAE across various sustainability indices. The two countries hold similar positions in their sustainability evaluations based on these indices. However, when considering the total number of ranks, it is challenging to determine which country holds a higher standing.

Table 8: Final Ranking Based on Sustainability Indices (Source: Created by authors)

Indicators Ranking Sustainability Indices	China	UAE
Sustainable Competitiveness	1	2
Natural capital	1	2
Resource Intensity	1	2
Social capital	2	1
Intellectual capital	1	2
Economic Sustainability	1	2
Governance	2	1
Ecological Footprint (gha)	1	2
HPI	1	2
EPI	2	1

Environmental Health	2	1
Ecosystem Vitality	2	1
Climate Change	2	1
Sum of ranks	19	20
Final rank	1	2

The comparative evaluation of these nations using creativity and sustainability indices clearly demonstrates that China excels as the top performer in creativity and the creative economy. Furthermore, China emerges as the leading country across nearly a dozen assessments of various sustainability indices.

6. Conclusions

The arts and cultural sectors play a crucial role in supporting economic sustainability and fostering urban economic development. The sustainable development (SD) goals of metropolitan areas and regions must align with government innovation policies. Concepts such as the 'creative turn' and the 'green turn' reflect a shift in public opinion, seen in the increasing demand for more sustainable goods and services. However, our research suggests that creativity, economic activity, and sustainability do not always align; in fact, these aspects of human intention can sometimes appear incompatible. Key sustainability indicators like the ESI, EPI, GSCI, and SSCI are strongly correlated with the economic development of the countries they assess. Higher income levels are typically linked to better evaluations on these indices. Interestingly, there is also a correlation between the EFP and HPI indices and income levels; while there are exceptions, countries with lower incomes tend to outperform those with higher incomes.

China stands out as the top-performing nation in innovation and the creative economy, according to comparative studies between China and the United Arab Emirates, based on various creativity and sustainability indices. However, both countries appear to be in similar sustainability positions, making it challenging to determine a clear leader based solely on their overall rank totals.

Fostering civil society discussions and other peer learning activities in creative hubs, urban areas, and regions can be highly beneficial. Additionally, strengthening the legal framework for the innovation economy and raising awareness of the cultural economy are key steps toward progress. One approach to achieving this is by revising the provisions for intellectual property rights in the Digital Single Market Strategy.

The examination and comparison of sustainability and creativity indices for a subset of nations over a short period are key limitations of this study. Future research could employ advanced techniques such as multiple regression and panel data analysis to gain a more comprehensive understanding of how the innovation economy influences the sustainable development of nations.

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