

TECHNOLOGICAL FEATURES OF ABU DHABI

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Abstract

Information and communication technologies ICT is a key driver of globalization, facilitating flows of money, capital, and information. It has reshaped industries, including telecommunications and e-commerce, contributing to a new “information age”. Abu Dhabi has invested heavily in technology to support its economic transformation, aiming for a knowledge-based economy. This research emphasizes the impact of technological globalization on Abu Dhabi's industrial projects, using many resources with interviews with local experts to showcase this transformation. Abu Dhabi has initiated several large projects in tourism and infrastructure, addressing challenges like urbanization and environmental concerns through sustainable city planning. Strategies include enhancing connectivity through e-government and improving administrative structures for modern governance. Transnational corporations play a crucial role in technology transfer and urban development, highlighting Abu Dhabi's emergence as a global city. The study examined the Strata case study as practical evidence of Abu Dhabi's relentless pursuit of leveraging the technological dimension of globalization and beyond in the Fourth Industrial Revolution. The Strata project exemplifies Abu Dhabi's technological advancements and aims to position the city as a global research hub. The study explores how technology influences Abu Dhabi's development and its integration into global markets.

Keywords: Technological Globalization; Knowledge-Based Economy; Information and Communication Technology (ICT); Advanced Manufacturing; Abu Dhabi Economic Diversification

1. Introduction

Information and communication technologies (ICT) have been one of the driving forces behind globalization. It is argued that technology is at the root of globalization, described as the “information age”. The central players in technological innovations are telecommunications, the AI and e-commerce. It is argued that flows of money, capital, information, and technology have effectively become deterritorialized, enabling new spatial and institutional configurations of economic activity [1]. Recent progressive industrial ventures have generated new forms in response to new global realities, cultural fascinations, and technological advances. Contemporary culture is powered by

digital imaging technology, which has transformed the way we visualize and see the world. Due to these global corporations and financial institutions have been able to operate with a scale, speed, and power unimaginable only two decades ago [2].

In post-globalization era, which called "deglobalization" or "reglobalization," which characterized by shifts towards regionalism, along with technology-driven transformations such as the "digital age," the "age of artificial intelligence," and perhaps the "Anthropocene" (a human-led climate era). The UAE has moved up five places in 2023 to be ranked as the top Arab country and the 37th out of 166 countries in the latest UN technology index that evaluates countries on their readiness to adopt advanced technologies such as artificial intelligence with a focus on green.

The analysis of global dimensions is essential to the understanding of the technological features of Abu Dhabi. The perspective of technology offers an approach to study globalization and its impacts on Abu Dhabi's different technological projects. This paper does not detail the technical programmes and processes used in Abu Dhabi, but instead emphasizes on technology, which reflects the effects of technological globalization, and the impacts of industrial aspects through a series of interviews conducted in Abu Dhabi in the period from 1/8/2025 to 15/12/2025 with engineers, executives of high-tech institutions managers, economic planners, and critics [3,4].

This paper, in critically assessing the technological dimensions of Abu Dhabi's industrial features, places Abu Dhabi within the current globalization discourse, and emphasizes the industrial outcome as a part of technological drivers. Several projects stand out as examples in this regard. The Strata project will be the prime case study for exploring the technological dimensions of AD technology projects; the Strata project will also be used as an example of a significant step towards achieving a balance of power [5]. It will be shown how, through technical devices, imaginings are directed at a global audience, and this is done intentionally to further highlight the fact that AD is 'going global'. It's all part of the UAE capital's bullish aim to position itself as a global research hub [6].

The study first considers the "effects of technology on AD's development and look at the ways in which technology can reflect different characteristics of globalization [7]. Secondly, it produces more refined statistics to identify global arenas in which global technological firms perform their acts. Focusing on the transnational corporations, which are seen as the central actor in the projects, there is special emphasis on the role of technical enterprises [8]. Thirdly, the study will evaluate, using examples from the city of Abu Dhabi, how local technology sector has been influenced in the global context.

2. Upgrading the Technological Basis

Abu-Dhabi is the largest of the seven Emirates that comprise the United Arab Emirates it accounts for 86.7% of the total surface area of the state. Abu-Dhabi city is the capital of the UAE with 1,493,000 inhabitants. The Emirate is home to the world's sixth largest proven oil reserves also it is the biggest oil producer in the UAE and owns 94% of the

UAE's oil and natural gas. The plans of AD form the branding strategy of Abu-Dhabi. Formulated in 2007, the main objective of the Plan Abu-Dhabi 2030 is to achieve effective economic transformation of the Emirate's economy [9].

Importing the latest modes of technology is the new issue, towards which many GCC countries in economic planning and policy making are now turning to. The UAE has the potential to become a top knowledge-based economy by attracting investments in emerging technologies, with the government's investment in AI alone estimated to reach more than \$33 billion by 2027 [10]. This is largely because the UAE has become caught up in a mass of pioneering initiatives projects. Entities have started becoming more innovative, and this new attitude has been a driving force for further development and growth in the UAE's economy. This 'innovation turn' has been supported by market policies.

The main concerns, in respect to AD's vision, were targeted at certain institutional levels that were seen to be limiting the city's capacities in achieving its final objectives, in terms of establishing a regional world city for commercial and cultural hub or high technology research and development activity [11]. A comparison study conducted between Singapore, and UAE cities shows that concurrent to the aggressive promotion of high-tech sectors, there is a highly pragmatic and stepped approach in terms of attaining the city's final objectives.

Imported technology has had a big impact on the growth in AD. Since the 2000, AD has put major efforts into upgrading its technological infrastructure as the basis for supporting complex and multilayered economic, social, and cultural networks conducted simultaneously across space and time barriers. Encouraged by the success in managing Free Trade Zones, the Government of AD launched the pioneering initiative of AD Technology, Electronic Commerce, and Khalifa Free-Trade Zone as it is of rapidly growing importance for AD.

Building on the national framework, AD has pursued an imaginative and aggressive Information Communication Technology-based development policy to maximize its potential gains in terms of international investment, while fostering a knowledge-based development policy. The crowning achievement in this area has been the development of high-tech industries such as Strata, Edge, and others. Former aims were for converting AD into clear energy development hub for the world [12].

Aldar and other property-led initiatives have undoubtedly been influenced by the regional high-technology policies. These primarily relied on the development of technopoles and science parks to re-create the dynamics found in leading high technology locations. They operate on various geographical scales, including entire regions, cities, or smaller property developments. AD's initiatives differ from the mainstream experience in one crucial manner - the city lacks an established academic or industrial research tradition that could be tied to such property and technology

initiatives. Indeed, its most established higher education institution, the UAE University in Al Ain (UAEU), was founded in 1977 [13]. Another focus in the high-tech corridor is Strata. This is designed to create a military industries community to help provide military services to the MENA region.

In addition to housing the Mohamed bin Zayed University of Artificial Intelligence, (MBZUAI) in AD, which was established in 2019 to be a leader in innovation and technological development based in Masdar City. The university focuses on artificial intelligence on four main axes, including industrial and manufacturing technologies. With its focus on postgraduate studies related to artificial intelligence technology, this initiative is the right step towards bridging the gap in research capabilities in Abu Dhabi [14]. In addition to these notable university-led initiatives to promote innovation, research, and development, which aims to establish Abu Dhabi as a knowledge-based economy by utilizing tourism, information technology, media, trade, and services as pivotal industries to move away from dependence on oil-related products.

3. The Growth of Technology

Significant efforts have been taken to link global communications networks. For instance, E-government has been developed in AD not only to ease the investor's interaction with official departments, but also to encourage making an easy access to the global market. This led to improve the competitiveness of AD's enterprises as its business transactions are conducted increasingly by electronic means. This is not just a technical issue but demands a full-scale change in enterprise culture. This strategy was part of an overall goal of a new economic policy that also includes develop conventional communications and government linkages globally helping transform AD functionally to be a rendezvous for business and FDI flows [15].

AD's government noted that there is also a need to overcome the notion that existing administrative structures are no longer adequate for the demands of modern government. Therefore, the government has embraced modern technology: many government functions are now done electronically and much more efficiently. AD, which continues to be one of the main hubs of cultural activities in the Middle East, has experienced an increase in amenities investment from USD 3bn in 2000 to USD 45bn in 2006. The tourism industry are the major sectors of the local economy that have generated a high demand for new exceptional building investments. The UAE truism market reach 61 billion USD in 2024. Looking forward, the market is expected to expand significantly by 2033. The machinery sector is one of the up-and-coming industries in AD, reflecting the growing scale of industrial and urban development [16].

According to an economics researcher in the Department of Economic Development, AD has been given steadily expanding access to advanced Western technologies through a relaxation of import controls. AD's technology-oriented projects reflect the concerns of individual companies regarding falling behind in the global technological race. This is

reflected in the flourishing of international technical exhibitions held in the city. Such a role has an influence and impact on the direction of foreign investment. Development of the information and technology sectors encourages more foreign investments and leads to new directions in the establishment of technology complexes that will become mega ones in the future [17].

The process of globalization is being driven by several forces, all of which have served to foster greater intraregional trade and technological exchange. The imports of technical equipment play a vital role in attracting flows of technology [18].

The development of the AD is intimately linked with the development of new technologies, and the mobility afforded by these inventions. For example, a large seaport in the emirate is planned Khaleefa port which is central for future development plans. This shows the centrality of technology and indicates how AD is embracing new conditions of mobility and interconnectivity. Not like other Emirates, the oil has its tremendous importance. Therefore, resources for development are derived from AD's capability to attract resources, such as a highly skilled labour force and technical equipment, by drawing on sources from outside the city. AD's view of its function as a state is as a facilitator and a regulator of the flows, as well as to provide the necessary infrastructure to co-ordinate and manage these resources [19].

Abu Dhabi has been investing heavily in the development of its tourism facilities with many mega projects: Shams Abu Dhabi, Saadiyat Island, Yas Island, Desert Islands, Al Raha Beach, Warner Brothers Theme Park, Souwwah Island, Capital Centre, Al Reem Island, Khalifa Port, Mina Zayed, Ferrari Theme Park. The growing level of urbanization is behind serious problems such as noise and environmental pollution especially in big cities. To face this challenge Abu Dhabi built a zero-carbon city or as known as Masdar City which will be designed by British architects Foster and Partners [20]. Souwwah Island, Mina Zayed and Al Reem Island will form the new Abu Dhabi Central Business Districts. Saadiyat Island is the star project of the Tourism Development and Investment Company. The island is divided into 7 districts: Saadiyat Retreat, Saadiyat Beach, Saadiyat Lagoons, Saadiyat Reserve, Saadiyat promenade, Saadiyat Marina and Saadiyat Cultural Districts [21].

These are examples of multinational companies operating on different projects. New multinational companies that offer services, technology, and particularly architectural innovation. As one official in Masdar city stated "Modern technology for AD was in demand and viable. It was also natural outcome of new strategic policy in AD. Opportunities were there to create new ideas, adopting the goal of Perfection to meet the challenges of the future and strengthen economic pillars".

4. The Influx of Global Technological Firms

Technology is easily available to globalizing cities where iconic architecture is an incitement to spend money. A relationship exists between TNC and the designers of new

technology, as witnessed in AD. Funding from TNCs aided the initial influx of interactive technology to enhance connectivity and promote architectural communication. I will focus on statistical evidence concerning transnational enterprises and technological spillovers in AD [22]. Many TNCs, despite the diversity of their cultures and institutions, are sharing the experience of the iconic projects in AD. The data on the activities of these transnationals allows the systematic analysis of the impact of foreign presence on architecture. Practical evidence on the transfer and creation of productive and technological activities is available.

Most transnational sources are European, American and Japanese, with apparent control by American enterprises in terms of their number and size. Over the past Twenty years, a series of important technological projects have had a strong influence, not only in encouraging more transnational companies to create more projects in AD, but also in developing technological industries that used the capital Abu Dhabi as a base to produce goods and services [23]. Changes in production location can, therefore, relate to the increasing porosity of the national borders. This constitutes a basis for the emergence of a global city in the Middle East.

A comparison of the period 2000-2022, and 2001-2010 shows the significant development in transnational projects economic and urban activities and the exploitation of network transport and communications. The weapon industry are good examples of sectors run by transnational administration [24]. Other traditional sectors (construction) have been updated thanks to intense foreign direct investment helping the direct delivery of a full range of infrastructure products, especially communications and utilities, and art design technology. An important factor in this, is the contribution of intermediate financial services in FDI [25].

Table 1 some international companies working on Abu Dhabi projects 2025.

Projects	position	estimated cost “USD”	head office
GAL	UAE-based provider of integrated aerospace & defence sustainment services	No reliable public figure found	Abu Dhabi, UAE
EDGE	Advanced technology & defense conglomerate (focus on weapons, cybersecurity, aerospace, AI, and autonomous systems).	Not publicly listed (state-owned). However, analysts estimate the group’s combined portfolio is worth several billions of USD, based on 25+ subsidiaries and annual defense export deals worth hundreds of	Abu Dhabi, UAE

		millions.	
MUBADAL A	Abu Dhabi's sovereign investment company, invests across diverse sectors globally.	As of 2024, assets under management ~ US\$330 billion.	Offices in London (UK), New York (USA), Beijing (China), but main HQ is still Abu Dhabi
ASTRA TECH	UAE-based consumer technology / fintech investment group, super-app, acquisitions.	Raised funding ~ US\$500 million in one round	Abu Dhabi, UAE
MASDAR	Renewable energy and clean technology company; global renewables investor.	Company has developed/invested in projects valued over US\$20 billion+	Offices and project offices in London (UK) and Washington D.C. (USA), but main HQ remains Abu Dhabi
STRATA	Advanced manufacturing for aerospace & advanced materials; a platform under Mubadala	No public clear cost/valuation figure found	abudhabi / alain
EGA	Large aluminium producer, "premium aluminium" leader.	Valuation estimated at US\$10-15 billion for potential IPO.	Abu Dhabi, UAE

5. Strata Case Study

Strata as a Model of a Transnational technology Company. To understand the role of multinational corporations and technology flows, I will take a look at one of the aerospace companies, Strata, for example.



5.1 Foundations and Strategic Vision

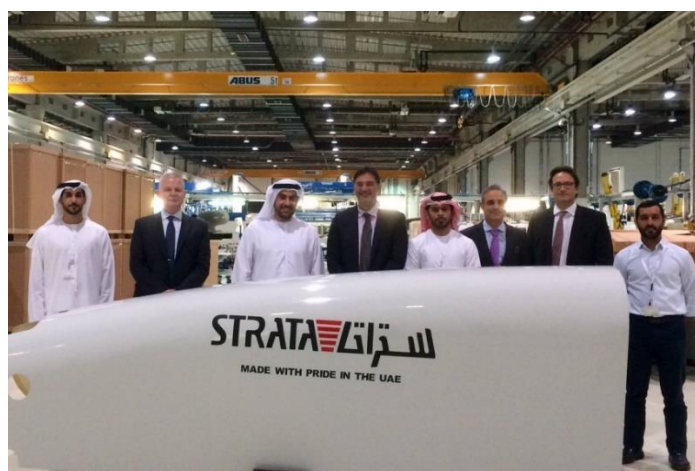
Abu Dhabi's transformation towards a diversified knowledge-based economy is epitomized by Strata Manufacturing, a company specialized in manufacturing composite aircraft structures. Strata has become a model for global technology companies operating in the UAE. This case illustrates the technological interconnectivity between Abu Dhabi and the rest of the world, as well as knowledge transfer processes [26]. Through its strategic alliances with global aviation and aerospace industry leaders, and its innovative workforce development initiatives, Strata embodies the values of global technology companies while serving the interests of economic diversification in Abu Dhabi.

The Strata case study explores the company's contribution to making Abu Dhabi a global hub for aerospace manufacturing and how it has aided in the development of a sustainable knowledge economy in the region [27]. The efforts to transform an oil-dependent economy into a diversified, sustainable, knowledge-based economy were manifested in the launch of the Abu Dhabi Economic Vision 2030 in 2008. One of the practical applications of these diversification goals was the establishment of Strata Manufacturing in 2009, which is considered a strategic sector in promoting economic change [28].

Strata Manufacturing is a subsidiary of the sovereign wealth fund of Abu Dhabi. The company began manufacturing its products in 2010 [29]. It is strategically located within the Nibras Al Ain Aerospace Park, a specialized area covering 5 square kilometres in Al Ain city. This project was selected to invigorate the economic life in Al Ain, where private sector job opportunities had previously been limited despite the presence of the United Arab Emirates University. The initial phase of the project included a 21,600 square meter area to produce composite aircraft structures, which are considered cutting-edge technologies, and it is expected to expand to over 60,000 square meters in the future. The goal of the Strata project, from development to operation, is not only to serve as an industrial facility but also as a platform for executing high-tech manufacturing operations that can achieve multiple strategic goals. These include transforming Abu Dhabi into a participant in global aviation supply chains, providing high-value job opportunities for Emirati citizens, disseminating advanced knowledge in this sector in the UAE, and proving that knowledge-based industries can thrive in the region.

The company's vision states that its goal is to become a leader in developing innovative advanced manufacturing solutions in Abu Dhabi that achieve sustainable financial, social, and economic value. This vision aligns with the objectives of the Abu Dhabi Economic Vision 2030, which aims to establish an advanced industrial sector that provides good job and training opportunities for citizens [30].

The company manufactures parts for Boeing 787 aircraft, such as vertical fins, and parts for Airbus A350 aircraft, including interior panels, spoilers, and others, as part of the ATR aircraft programs. More than 3,000 tool kits provided by the company contain over 50,000 components, as of 2019, for aircraft manufacturers worldwide, bearing the slogan "Proudly Made in the UAE" [31].



5.2 Globalization and Technology Transfer

The key success factor for Strata, as a cross-border technology company, lies in its strategic alliances with major aircraft manufacturers and suppliers in the aviation and aerospace industry worldwide. This relationship goes beyond the usual cooperation between suppliers, encompassing a wide distribution of knowledge, technology exchange, and joint development contracts. Strata have officially partnered with Airbus, Boeing, Leonardo-Finmeccanica's Aircraft Structures Division, Pilatus Aircraft, and FACC AG, as well as Saab and Sabca, thus becoming a tier-one supplier in the global aerospace market [32].

These relationships exemplify the extent of globalization for modern technology companies, where success is defined by the ability to integrate into the global network rather than operate within national boundaries. Technology is transferred and capabilities are developed within the technological environment adopted by the partnership structure that Strata embraces at multiple levels. Strata is a contractor with Airbus/EADS for the manufacturing of spoilers [33].

Strata manufacture various parts of Airbus aircraft wing fairings, where Airbus provides the technical specifications, quality requirements, and necessary guidelines for

executing the process. It also collaborates with Boeing in producing vertical fin ribs for the Boeing 787 and horizontal stabilizer components for the Boeing 777 program. In January 2019, Strata signed a seven-year agreement with Pilatus for various work packages for the highly versatile PC-24 aircraft, which included manufacturing tower covers, cone covers, and tail cones using steam sterilization equipment [34]. Strata also establishes strategic joint ventures to expand its value chain. In 2017, Strata collaborated with Belgian company Solvay, specializing in advanced materials and specialty chemicals, to create a joint venture for the manufacturing of pre-impregnated carbon fibers.

5.3 Workforce Development

Strata's role in building a knowledge economy in Abu Dhabi extends beyond production; it includes workforce development programs and the overall nurturing of human capital. The company has adopted various training programs to help refine technical and engineering skills, enhancing productivity to the highest standards [35]. The Aircraft Structures Technician Training Program, developed in partnership with Lockheed Martin and the United Arab Emirates University, is a cornerstone of Strata's workforce development efforts. More than 300 Emirati citizens have graduated from the program since its launch in 2010, contributing to the aviation sector with qualified technical personnel. Among other partnerships, the company collaborates with Khalifa University at the Space Research and Innovation Center, launched in 2012 to enhance local research capabilities and train future aerospace engineers [36]. In 2018, the company received the EN9100 design certification from Dekra, allowing Strata the opportunity to design and manufacture aircraft structures from composite materials. The development of manufacturing, execution, and design capabilities exemplifies the trajectory of successful technology companies in developing economies toward a higher level of value chain between assembly and innovation. Strata's localization model and the empowerment of Emirati women in high-tech manufacturing represent some of its most notable successes. The UAE government's strategy, focusing on providing sustainable job opportunities for Emirati citizens, known as localization, is a key element of the Abu Dhabi Vision 2030.

5.4 High-Tech Manufacturing and Abu Dhabi Vision 2030

The growth of Strata as a cross-border technology company is evidence of the continuous integration of high-tech manufacturing technologies and commitment to operational excellence. The company has consistently adopted Fourth Industrial Revolution technologies, such as automation, robotics, additive manufacturing, and digital manufacturing systems in its operations. In 2020, Strata installed two MTorres automated units to manufacture internal wing parts for the Airbus A350-900 automatically. Strata have also adopted digital manufacturing, which includes the

application of 3D printing for aircraft interior parts. Later in 2017, Strata collaborated with Siemens and Etihad Airways to develop additive manufacturing capabilities for internal aircraft components. This vertical integration model demonstrates that technology companies can create competitive advantages by controlling key inputs and technologies rather than relying entirely on assembly and integration strengths [37].

Strata's activities directly contribute to achieving many of the goals of the Abu Dhabi Economic Vision 2030, proving that comprehensive economic change is achieved through investment in technological fields. The main objective of the vision, which is to reduce dependence on oil by diversifying into knowledge-based sectors, is evident in Strata's aerospace production practices. By producing high-value manufacturing facilities, Strata not only contributes to increasing non-oil GDP but also develops more sustainable economic activities than those based on hydrocarbon extraction. The long product life cycle, technological intensity, and cross-border interconnectedness provide the aerospace industry with stability and growth opportunities, which are not available in resource-dependent economic systems. Strata's success has significantly impacted the diversification of Abu Dhabi's economy and the GCC region, AD have proven successful in this area.

6. Conclusion

The study has demonstrated that an analysis of globalization is essential in understanding the technological features of Abu Dhabi. Information and communication technologies ICT is a key driver of globalization, facilitating flows of money, capital, and information. It has reshaped industries, including telecommunications and e-commerce, contributing to a new "information age". In 2023, the UAE ranked 37th in the UN technology index, highlighting its readiness to adopt advanced technologies, particularly AI focused on sustainability.

The paper emphasizes the impact of technological globalization on Abu Dhabi's industrial projects, using interviews with local experts to showcase this transformation.

The Strata project exemplifies Abu Dhabi's technological advancements and aims to position the city as a global research hub. The paper explores how technology influences Abu Dhabi's development and its integration into global markets. Abu Dhabi has invested heavily in technology to support its economic transformation, aiming for a knowledge-based economy.

The government's commitment to AI, estimated at over \$33 billion by 2027, reflects this ambition. Masdar City is highlighted as a sustainable urban community attracting global companies in clean technology. The establishment of high-tech industries and educational institutions, like the Mohamed bin Zayed University of Artificial Intelligence, supports innovation and research. Despite advancements, institutional barriers remain that could limit Abu Dhabi's aspirations as a tech hub.

Strategies include enhancing connectivity through e-government and improving administrative structures for modern governance. Abu Dhabi has initiated several mega projects in tourism and infrastructure, addressing challenges like urbanization and environmental concerns through sustainable city planning. The city's growth is linked to its ability to attract skilled labor and technology, with plans for significant infrastructural developments like the Khaleefa port. Transnational corporations play a crucial role in technology transfer and urban development, highlighting Abu Dhabi's emergence as a global city. The study examined the Strata case study as practical evidence of Abu Dhabi's relentless pursuit of leveraging the technological dimension of globalization and beyond in the Fourth Industrial Revolution.

References

- [1] M. Castells, *The rise of the network society*, John Wiley & Sons, New York (2011).
- [2] D.C. North, *Institutions, institutional change and economic performance*, Cambridge University Press, Cambridge (1990).
- [3] J.D. Anthony, *The United Arab Emirates: dynamics of state formation*, Vol. 35, Emirates Center for Strategic Studies and Research, Abu Dhabi (2002).
- [4] M.M. Abdullah, *The United Arab Emirates: A modern history*, Routledge, London (2020).
- [5] C.M. Davidson, *Abu Dhabi: oil and beyond*, D. Vanderwalle (Ed.), Columbia University Press, New York (2009).
- [6] B. Gimbel, The richest city in the world—ninety miles from Dubai, another Xanadu has been decreed. Its name is Abu Dhabi, *Fortune International*, 155, No 5 (2007), 68.
- [7] M. Fahim, *From rags to riches: a story of Abu Dhabi*, London Centre of Arab Studies, London (1995).
- [8] D. Soskice, Varieties of capitalism: the institutional foundations of comparative advantage, *Sociologický časopis / Czech Sociological Review*, 40, No 6 (2004).
- [9] A. Dhabi, *Abu Dhabi economic vision 2030*, Abu Dhabi Council for Economic Development, Abu Dhabi (2008).
- [10] R.A. Al-Riyami, M.C. Maridevaru, S. Abdalla, M.E. Malefane, A.T. Kuvarega, B.B. Mamba *et al.*, Comparative study between the green template-assisted and template-free synthesis of ZnO nanostructure material properties in terms of their photocatalytic efficiencies, *Toxicological & Environmental Chemistry*, 107, No 10 (2025), 2050–2072.
- [11] R. Abdelal, Sovereign wealth in Abu Dhabi, *Geopolitics*, 14, No 2 (2009), 317–327.
- [12] D. Rodrik, Premature deindustrialization, *Journal of Economic Growth*, 21, No 1 (2016), 1–33.
- [13] S. Kerr and R. Khalaf, Abu Dhabi fund hires media experts, *Financial Times* (2008), 19.
- [14] Y. Al Otaiba, Our sovereign wealth plans, *Wall Street Journal* (2008), 19.
- [15] H. Hazime, From city branding to e-brands in developing countries: an approach to Qatar and Abu Dhabi, *African Journal of Business Management*, 5, No 12 (2011).

- [16] E.L. Glaeser and J.D. Gottlieb, The wealth of cities: agglomeration economies and spatial equilibrium in the United States, *Journal of Economic Literature*, 47, No 4 (2009), 983–1028.
- [17] H. Bathelt, A. Malmberg and P. Maskell, Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation, *Progress in Human Geography*, 28, No 1 (2004), 31–56.
- [18] S. Anderson, *Modern architecture and industry: Peter Behrens and cultural policy of historical determinism*, MIT Press, Cambridge (1977).
- [19] R.K. Linsley and J.B. Franzini, *Water resources engineering*, McGraw-Hill, New York (1981).
- [20] S.B. Schindler, Architectural exclusion: discrimination and segregation through physical design of the built environment, *Yale Law Journal*, 124 (2014), 1934.
- [21] R. Wikantiyoso and T. Suhartono, The role of CSR in the revitalization of urban open space for better sustainable urban development, *International Review for Spatial Planning and Sustainable Development*, 6, No 4 (2018), 5–20.
- [22] J.H. Dunning and S.M. Lundan, *Multinational enterprises and the global economy*, Edward Elgar Publishing, Cheltenham (2008).
- [23] S. Butt, A. Shivdasani, C. Stendevad and A. Wyman, Sovereign wealth funds: a growing global force in corporate finance, *Journal of Applied Corporate Finance*, 20, No 1 (2008), 73–83.
- [24] E. Thornton and S. Reed, Inside the Abu Dhabi Investment Authority, *Business Week* (2008), 6.
- [25] R. Sidel, Abu Dhabi to bolster Citigroup, with \$7.5 billion capital infusion, *Wall Street Journal* (2007).
- [26] D. Wiebenson, Utopian aspects of Tony Garnier's *Cité Industrielle*, *Journal of the Society of Architectural Historians*, 19, No 1 (1960), 16–24.
- [27] B. Kogut and U. Zander, Knowledge of the firm and the evolutionary theory of the multinational corporation, *Journal of International Business Studies*, 24, No 4 (1993), 625–645.
- [28] United Nations Economic Commission for Africa, *OECD development pathways: production transformation policy review of Egypt—embracing change, achieving prosperity*, OECD Publishing, Paris (2021).
- [29] Strata Manufacturing PJSC, *Strata – what we do*, Mubadala Investment Company, Abu Dhabi (2024), available at: <https://www.mubadala.com/en/what-we-do/strata>.
- [30] A. Mishrif, Industrialization and diversification strategies in the GCC countries, In: *Proc. Intern. Conf. on Innovation and Economic Diversification in Gulf Cooperation Council's National Development Plans (IED18)*, Vol. 14 (2018).
- [31] M. Shaban, Strata manufacturing, In: *Manufacturing our future: cases on the future of manufacturing*, World Economic Forum (2016), available at:

[https://www3.weforum.org/docs/Manufacturing Our Future 2016/Case Study 19.pdf](https://www3.weforum.org/docs/Manufacturing_Our_Future_2016/Case_Study_19.pdf)

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- [32] Strata Manufacturing PJSC, *Strata experienced a significant growth over 40%*, Strata Press Release (2024), available at: <https://www.strata.ae/press-release/strata-experienced-a-significant-growth-over-40/>.
- [33] M.E. Porter and J.E. Heppelmann, How smart, connected products are transforming companies, *Harvard Business Review*, 93, No 10 (2015), 96–114.
- [34] Strata wins offset deal with Pilatus and a manufacturing first for UAE, *Aviation Week Network* (2021), available at: <https://aviationweek.com/aerospace/emerging-technologies/strata-wins-offset-deal-pilatus-manufacturing-first-uae>.
- [35] D. Acemoglu and P. Restrepo, Artificial intelligence and jobs, *Journal of Economic Perspectives*, 34, No 3 (2020), 30–55.
- [36] W. Arnold, Wealth funds draw profits and attention, *The National*, Vol. 3 (2008).
- [37] E. Brynjolfsson, D. Rock and C. Syverson, The productivity J-curve: how intangibles complement general purpose technologies, *American Economic Journal: Macroeconomics*, 13, No 1 (2021), 333–372.