



Make it in the Emirates Forum - The Role of Innovation and Technology in Driving the UAE's Economic Future “Majra” National CSR Fund White Paper Report 2023

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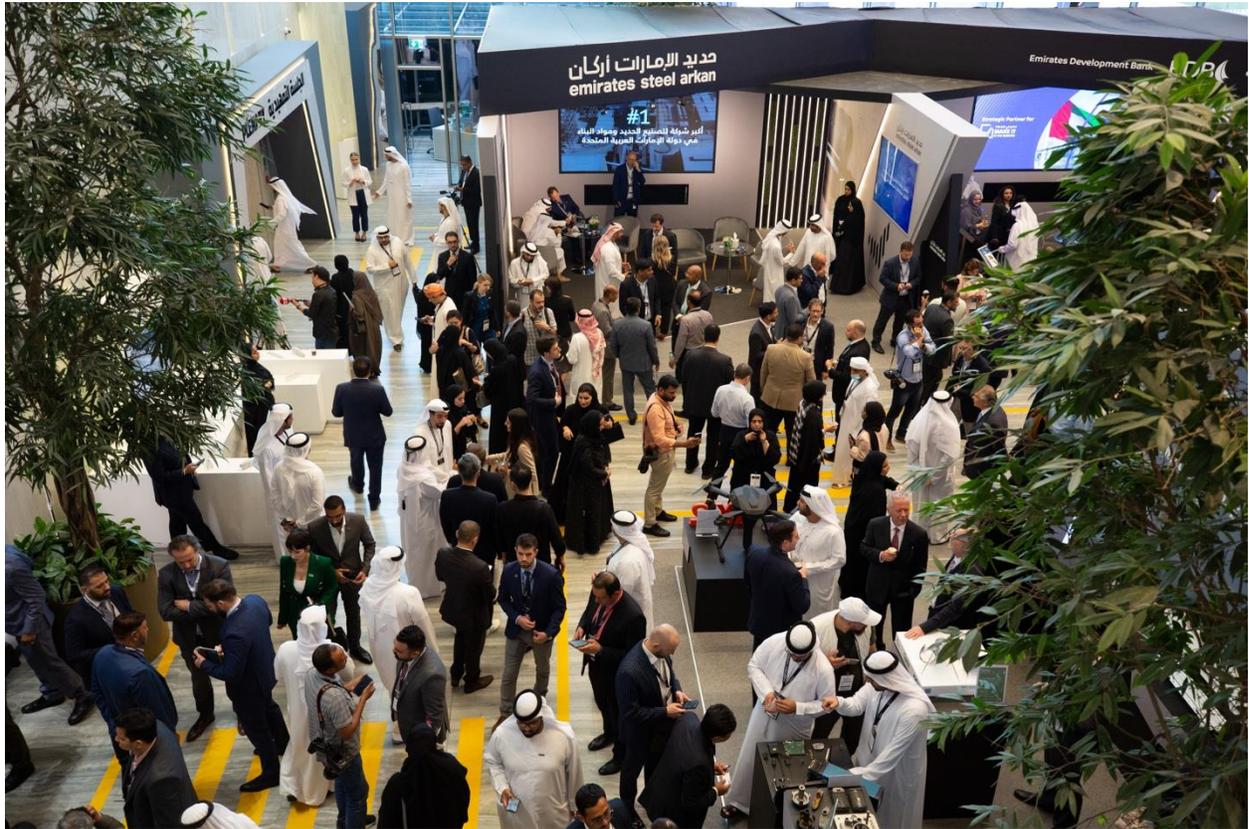
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Executive Summary

The UAE's focus on innovation is particularly evident in its significant investment in research and development (R&D), a strategic decision that aligns with the country's broader goal of diversifying its economy. Key themes that emerge from the UAE's approach include the critical role of academia in generating knowledge and nurturing talent, the success of the defense industry in reinventing and localizing R&D, and the potential of the burgeoning space sector to inspire innovation and entrepreneurship. By providing a comprehensive overview of these



elements, this white paper underscores the UAE's commitment to fostering an ecosystem conducive to innovation and growth.



Introduction

In a rapidly evolving global landscape, nations are increasingly recognizing the value of research, development, and innovation in driving economic growth and societal advancement. The United Arab Emirates (UAE) serves as a remarkable case study, leveraging its strategic location, progressive leadership, and robust partnership models to emerge as a hub for R&D and innovation in the Middle East. This white paper delves into the UAE's strategic approach towards fostering innovation, the role of academia in creating a vibrant knowledge economy, and the impact of the defense, aerospace, and space sectors in driving R&D and innovation.



The rapidly evolving field of AI has emphasized the need for an equally swift shift in our educational paradigms. As the engines of knowledge creation and dissemination, universities worldwide face the pressing task of preparing the upcoming workforce for an AI-centric future. Furthermore, in a highly globalized world, universities are also tasked with becoming international AI hubs, attracting and nurturing talent from across the globe. This paper provides an in-depth exploration of these dual roles of universities, outlining their potential in fostering an innovative and dynamic relationship between academia and industry.

The UAE has recently emerged as a powerhouse in the realm of space exploration. Starting from scratch just a decade and a half ago, the nation has succeeded in crafting a sustainable space sector linked with the global value chain, marking a triumph for their industrial strategy. However, the journey of the UAE space industry is not only a tale of national achievement but also a testament to the role of AI in driving innovation in novel sectors. This paper delineates the growth of the UAE's space sector and the role of AI in its development, offering valuable insights into the strategy and outcomes.

The white paper emphasizes the necessity and impact of cross-sector collaboration. The rapid growth and widespread application of AI necessitate collaboration among various stakeholders, including governments, industries, and academia. Such collaboration aids in addressing research gaps, ensuring the implementation of AI in various sectors, and achieving larger economic goals.

Themes at a Glance

Investment in R&D: The UAE demonstrates a robust commitment to R&D investment, leveraging it as a tool for economic diversification and innovation.

Role of Academia: Universities in the UAE play a pivotal role in generating knowledge, training innovators, and stimulating innovation within the larger ecosystem.

Defense Industry Success: Companies like Saab demonstrate the successful localization of R&D and the importance of strong collaboration with the government and end-users.

Space Sector Innovation: The space sector in the UAE serves as an inspiring example of developing a knowledge-intensive industry from scratch, fostering innovation and entrepreneurship.



Exploring Key Dimensions

Operation 300 Billion and the Role of Innovation

Operation 300bn aims to develop the UAE's industrial sector and enhance its role in stimulating the national economy. It aims to raise the industrial sector's contribution to the GDP from AED 133 billion to AED 300 billion by 2031. The strategy is aligned with national goals and international commitments relating to advancing sustainable economic growth, deploying clean energy solutions, driving industrial innovation and promoting responsible consumption and production. Its unique approach to stimulating foreign direct investment and supporting homegrown companies has seen its successful implementation, reflected in the national award recipients. This strategy is not only about attracting investment and encouraging local businesses. It is a concerted effort to establish the UAE as an export base, a critical factor for future economic



resilience and growth. The plan acknowledges the influence of artificial intelligence (AI) on manufacturing and R&D – it spurs innovation, cultivates technology-focused collaboration, and enhances local employment opportunities.

Decarbonization and Industrial Efficiency

One key element in the UAE's strategic plan is its collaboration with the government and private sector, including family trading groups, in driving decarbonization through innovation and technology. Contrary to common belief, decarbonization is not simply about sustainability today; it actually brings value to the industrial sector. Implementing the appropriate technological solutions and efficiency measures can lead to decreased emissions throughout the production process.

Blueprint for Industrial Advancement

To materialize this plan, the incorporation of technological strategies, processes, and mechanisms across the value chain is essential. Cooperation with industrial stakeholders is paramount to the process. With stakeholder input, the right blueprint that fits the UAE's developmental context can be developed. This approach not only addresses decarbonization and efficiency, but it also considers the adoption of technology, creating more in-country value, increasing workforce competitiveness, and creating local opportunities for international export impact. This holistic approach ensures sustainable growth and continued investment across the value chain, unlocking the industrial sector's potential in the UAE.

The Role of Public Education and STEM

Public education serves as a foundational pillar in the UAE's strategy, especially with an emphasis on science, technology, engineering, and mathematics (STEM). It is crucial to plant the seeds of STEM education at an early stage to ensure the sustainability of the initiatives already in motion. However, the education strategy is holistic and does not solely focus on STEM. Instead, it encompasses all pillars of development, as understanding the potential of various industries is critical for the sustainability of the nation's economy. Efforts are underway to ensure awareness and comprehension of the opportunities within the industrial sector among students transitioning from secondary to tertiary education.

Collaborations with Trading Groups

Collaboration with family trading groups, who represent a substantial share of trading, is a critical part of this process. These collaborations are significant, given the extensive influence of these groups. For example, the Tecom Group, part of Dubai Holding Asset Management, was created to diversify the economy and contribute to the non-oil sector. The Group identified six



sectors for sustainable economic

diversification: technology, media, education, industrial design, and science. Today, the group houses over 800 industrial partners, with half of them manufacturing from Dubai.

Defense, Aerospace, and Innovation: The Saab Legacy

Defense and aerospace, as sectors, are known for their high level of innovation, a phenomenon we can see in the aerospace and defense company, Saab's impact on Sweden. A century ago, Sweden was one of the poorest countries in Europe, yet today, it is one of the most innovative nations, with no significant natural resources like oil to prop up its economy. Rather, its industrial development has been the catalyst for this transformation. Sweden's investment in Research & Development (R&D) stands at 3.7% of GDP, the highest in Europe. For Saab, the investment in R&D has been between 20-25% of its sales over the past decade. Saab's engagement in the UAE began in the 1980s, providing products for the armed forces and security systems. The significant turn came in 2017-2018 when they were given an opportunity to invest in and own 100% of a foreign entity. Collaborating with several ministries and the Department of Economic Development, they set up an industrial park. Today, Saab has more than 150 employees serving the UAE and has developed their first "made in the Emirates" product, a 5G network communication system.

Universities as Catalysts for R&D: Lessons from Carnegie Mellon

Universities play a critical role in driving R&D, functioning as centers of knowledge creation and talent development. They nurture an environment that protects and stimulates innovation, offering a unique value compared to the industrial sector. The rejuvenation of Pittsburgh's economy, post the fall of the steel industry, with the help of Carnegie Mellon University, and the roles Stanford and MIT play in their ecosystems, serve as examples of this dynamic. The Mohammed bin Zayed Artificial Intelligence University (MBZUAI), aims to fulfill a similar role in the UAE. With its unique focus on AI, MBZUAI can contribute to the ecosystem by producing foundational knowledge, training innovators, and fostering a conducive environment for innovation. The vision for the university was conceived three years ago, recognizing the importance of AI for the economy. It now ranks among the top 20 AI institutions worldwide, training top talents for the industry. Looking forward, the role of universities in the region is pivotal in creating a dynamic relationship between industry and academia. By bringing industrial problems onto campus and creating robust, sustainable solutions, universities can contribute significantly to economic growth. As the hub for AI in the region develops, universities need to enlarge and deepen their knowledge scope. A higher investment into R&D, akin to countries where education plays a crucial role, can further enhance this process, fostering an environment that attracts and trains more talent, and inspiring people to join this exciting movement.

Building the Space Sector: Innovation and Entrepreneurship



The UAE's space sector serves as a perfect illustration of how an industry can be developed entirely from the ground up. The sector started around 15 years ago, initially focused on human capacity building and acquiring skills in designing and developing complex systems. Since then, the emphasis has shifted towards creating an impact on the private sector. Today, the space sector in the UAE is fostering innovation on the ground and acting as a beacon of space diplomacy. Importantly, it is inspiring a new generation of Emirati scientists and engineers. The Emirates have announced 30 off-takes for the private sector to produce parts for an upcoming spacecraft set to launch in 2028 to the asteroid belt. This initiative allows for a better understanding of how to develop knowledge-intensive sectors and create opportunities for the private sector.

The Defense, Aerospace, and Space Nexus

Defense, aerospace, and space are intrinsically linked, with developments in one sector often driving R&D and innovation in the others. These sectors need to be sustainable, thus necessitating strong collaboration, especially with the government, which is typically the primary customer. Ongoing communication with the government and end-users is therefore vital for success. The UAE's efforts in these sectors not only underscore its commitment to technological advancement but also highlight the benefits of a strategic, collaborative approach to driving innovation and creating new opportunities.

Policy Recommendations

Based on the observations and insights presented in this white paper, the following policy recommendations are proposed to further enhance the UAE's capacity for innovation and sustainable development:

1. **Boost R&D Spending:** Continue to increase investment in R&D across key sectors. Prioritize the areas that align with the nation's strategic goals and offer high potential for breakthroughs and socio-economic benefits.
2. **Strengthen Academia-Industry Ties:** Develop and implement policies that encourage and facilitate closer collaboration between academic institutions and the industry. This could include partnerships for joint research, knowledge exchange, and talent development programs.
3. **Encourage Entrepreneurship in High-tech Sectors:** Develop and implement policies that incentivize entrepreneurship in high-tech sectors, such as defense, aerospace, and space. This could include regulatory incentives, access to capital, and initiatives to attract and retain top talent.
4. **Localize R&D in Defense and Aerospace:** Continue the successful model of companies like Saab, encouraging more foreign defense and aerospace firms to set up R&D facilities in the UAE. This could be facilitated by policies offering strategic advantages for localization.



5. Promote Space Sector

Innovation: Continue investing in space-related programs and stimulate private sector participation through various means such as public-private partnerships, off-take agreements, and startup support.

6. Build a Robust Talent Pipeline: Work closely with educational institutions to develop a talent pipeline that caters to the evolving needs of the economy, focusing on advanced technology skills and research capabilities.
7. Enhance Collaboration and Cooperation: Foster strong domestic and international partnerships between various stakeholders, including government agencies, industries, and academia, to drive innovation and technological advancement.

Conclusion

In conclusion, the UAE's strategic approach towards fostering innovation, underpinned by significant R&D investment and robust academia-industry collaborations, offers valuable insights for countries seeking to build a resilient, diversified economy. The case of the UAE further underscores the transformative potential of sectors such as defense, aerospace, and space, not just in terms of technological advancement, but also in driving broader socio-economic development. As the UAE continues to evolve and innovate, it will undoubtedly remain a beacon for other nations looking to forge a similar path towards sustainable growth and prosperity.



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