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High-Quality Development in China-Arab Digital Economy Cooperation: Opportunities, Challenges and Prospect*

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As the world undergoes a digital transformation, China-Arab cooperation in the digital economy has become a pivotal area of international engagement. This article explores the opportunities, challenges, and prospects of this cooperation, with a particular focus on the Digital Silk Road initiative under the Belt and Road framework. The study highlights the synergies between China's technological advancements and the digital strategies of Arab countries, examining progress in key areas such as cooperation mechanisms, digital infrastructure, and cross-border e-commerce. Moreover, it identifies significant challenges, including the digital divide and talent shortages, and proposes strategies to enhance China-Arab digital economy cooperation. These strategies include improving digital infrastructure, growing digital talent cultivation, and developing smart city initiatives alongside expanding cross-border e-commerce, all aimed at fostering sustainable and mutually beneficial outcomes.

Keywords: China-Arab cooperation, digital economy, Digital Silk Road, high-quality development, digital infrastructure

Introduction

The digital economy represents a transformative shift in economic structure, where digitized knowledge and information become core elements of production. Digital technology serves as the primary catalyst, supported by modern information networks as essential infrastructure. This interdependence drives a surge in digitalization, networking, and intelligence across economic and societal realms. The Digital Silk Road, a key component of the Belt and Road Initiative, has emerged as a strategic channel for international collaboration, opening new avenues for digital economic engagement and shaping a dynamic and competitive landscape. As China advances to a new stage of development in 2021, it is driving the rapid development of the Digital Silk Road. This has led to a surge in scholarly interest in China-Arab digital economy cooperation, yielding an array of insights and research findings.

Wang (2022) elucidates the primary concepts and driving dynamics of the digital economy, systematically analyzing its development within the Arab world, advocating for reinforcing existing cyberspace dialogues and consultative frameworks between China and Arab nations to foster greater integration. Similarly, Guo (2022) highlights the growing importance of digital economy cooperation between China and GCC countries under the Belt and Road Initiative and identifies challenges such as a shortage of high-end talent and insufficient local production capacity, proposing more substantial policy alignment and innovative talent development strategies

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as solutions. Shu and Yu (2022) turn their focus to the gendered aspect of the digital economy in the Arab world-"Her" digital economy, examining women's roles and emphasizing the transformative potential of digital trade and cross-border e-commerce in empowering women through entrepreneurship and employment. Han (2022) addresses the complex digital divide in the Middle East, recognizing its governance implications and the potential for collaborative solutions. Liu (2023) shows that there are differences in economic development and digitization levels among Arab countries, and China should adopt different modes of cooperation according to the situation of Arab countries. Collectively, these studies provide valuable insights into the complexity and potential of China-Arab digital economy cooperation. Nevertheless, further research is needed to explore key issues and development areas, particularly the challenges and opportunities for achieving high-quality cooperation. Identifying strategies for sustainable and mutually beneficial collaboration is essential to realizing the full potential of this partnership.

Cooperation Connotation and Conditions

Development Connotation

The concept of the "digital economy", first introduced by Don Tapscott in his 1995 book *Digital Economy*, primarily signaled the shift from an industrial to an information society. Although the term lacks a strict definition, its core essence revolves around "economic activities based on digital technology". The G20 Digital Economy Development and Cooperation Initiative, adopted in 2016, defines the digital economy as leveraging digitized knowledge and information as key production factors, modern information networks as carriers, and information and communication technologies (ICT) as tools to enhance efficiency and optimize economic structures. It defines "digital economy" as "a series of economic activities that use digitized knowledge and information as key production factors, modern information networks as an important carrier, and the effective use of information and communication technologies as an important driving force for efficiency improvement and economic structure optimization". In 2017, China incorporated the digital economy into its Government Work Report, though specific areas of focus remain undefined. Considering China's emphasis on constructing the Digital Silk Road as a means of foreign digital economy cooperation, this concept can be used to delineate the scope of China-Arab digital economy collaboration.

The Digital Silk Road, an amalgamation of digital economy development and the Belt and Road Initiative, was formalized during the first International Scientific Program on the Digital Belt and Road Conference held in Beijing in 2016. At this event, the concept of the Digital Belt and Road, also known as the Digital Silk Road, was officially established. While the Digital Silk Road emphasizes international cooperation and exchange through digital platforms, the digital economy focuses on a broader economic model encompassing various activities. Nonetheless, the digital economy forms an integral part of the cooperation content within the former. Thus, the scope of cooperation in the digital economy can be defined based on the relevant international agreements China has established within the context of the Digital Silk Road.

The Belt and Road Initiative for International Cooperation on the Digital Economy, launched by seven countries in December 2017, prioritizes network connectivity, e-commerce, smart cities, and human resource training. Moreover, network infrastructure and cybersecurity are vital for the secure and sustainable development of the Digital Silk Road and its associated economic activities. President Xi Jinping has underscored the importance of international cooperation in these areas to bolster the growth of the digital economy and advance the broader objectives of the Belt and Road Initiative.

In summary, China-Arab digital economy cooperation centers on leveraging the Belt and Road Initiative as a collaborative platform. This cooperation prioritizes network connectivity and infrastructure development, focusing on boosting digital capabilities across the region. The goal is to advance the construction of the Digital Silk Road, promoting digital trade, innovation, and governance frameworks. Ultimately, this cooperation aims to contribute to the high-quality development of the Belt and Road Initiative, driving economic growth, fostering regional integration, and facilitating the transition to a more sustainable and inclusive future.

Favorable Conditions

Amid a rapidly evolving global landscape, the synergy between China's new development stage and the accelerated digital strategies in Arab nations presents a unique opportunity for high-quality China-Arab digital economy cooperation. As China transitioned into a new stage of development in 2021, many Arab countries had already incorporated digital economy development into their national strategies and visions, such as Sudan's "National Strategy (2007-2031)", Bahrain's "2030 Vision", Jordan's "2025 Vision", Saudi Arabia's "Vision 2030", Egypt's "Vision 2030", Oman's "Vision 2040", Kuwait's "Vision 2035", and the UAE's "UAE Centennial 2071". This alignment of strategic objectives and technological advancements creates a conducive environment for fostering collaboration.

Furthermore, amid profound global transformations, China and the Arab countries are increasingly committed to building a community with a shared future. China's successful experience in digital economy development can serve as an exemplary guide for Arab countries, many of which are at the early stages of digital development, with insufficient information technology penetration and connectivity to drive significant economic growth. In contrast, China has firmly integrated into the global innovation network, emerging as a crucial participant and driver in the ongoing scientific and technological revolution and industrial transformation. China's robust digital economy demonstrates resilience that is commensurate with that of traditionally developed nations. Unlike Western nations, China-Arab digital economy cooperation is grounded in China's respect for Arab national conditions and their independent development paths. This cooperation seeks to progressively narrow the digital divide between the two sides and achieve inclusive, mutually beneficial outcomes. As a result, Arab countries are increasingly aware of the importance of digital transformation in industrial evolution and economic growth, boosting their confidence in developing the digital economy. By sharing its advanced technologies and successful experiences, China actively addresses the development needs of Arab nations, charting a course toward accelerated digital economic progress in the region.

Significant Areas and Cooperation Progress

The expanding collaboration between China and Arab countries in the digital economy represents both a natural progression in their relations and a strategic response to the global digital transformation. This transformation has become a new partnership frontier, particularly under the Belt and Road Initiative. Adhering to the principle of "extensive consultation, joint contribution, and shared benefits", the Chinese government has established a comprehensive framework for exchange and cooperation. This framework emphasizes critical areas such as enhancing network connectivity, cultivating talent, and advancing cross-border e-commerce, all essential for driving the digital transformation of Arab nations.

Expansion of China-Arab Digital Economy Cooperation Mechanisms

The China-Arab "Online Silk Road" initiative, launched in 2015, marked a significant expansion of cooperation, extending beyond network connectivity to include digital talent exchanges and emerging industries.

This initiative was further reinforced in 2016 with the approval of the "China-Arab Countries Online Silk Road Economic Cooperation Pilot Zone and Ningxia Hub Project", which deepened the strategic partnership. In 2017, China, along with the United Arab Emirates, Saudi Arabia, and other countries, launched the "Belt and Road Digital Economy International Cooperation Initiative" and jointly signed the "Memorandum of Understanding on Strengthening Investment Cooperation in the Digital Economy" (MoU) with Egypt. The momentum continued in 2018 when President Xi Jinping emphasized the need to accelerate the construction of the Online Silk Road during the Eighth Ministerial Meeting of the China-Arab Cooperation Forum (CACF), highlighting the crucial role of digital connectivity in the bilateral relationship. This momentum persisted into 2019, with China and Egypt signing another MoU to enhance communications and information technology (IT) cooperation. This agreement facilitated joint efforts to build information and communications infrastructure and explore big data and artificial intelligence.

The Ninth Ministerial Meeting of the China-Arab Cooperation Forum (CACF) in 2020 further emphasized the importance of collaboration and mutual understanding in internet and digital economy development. In 2021, the "China-LAS Cooperation Initiative on Data Security" was launched, further solidifying governmental support for bilateral digital economy cooperation. This progress continued through 2022, marked by the signing of multiple intergovernmental agreements and MoUs at the first China-Arab Summit, and into 2024, with the finalization of a digital economy investment cooperation document between China and the UAE. These governmental endorsements have significantly bolstered confidence, establishing a solid foundation for ongoing bilateral collaboration in the digital economy, and reflecting a shared vision for a connected and prosperous future.

Steady Progress in China-Arab Digital Infrastructure Cooperation

China, recognized as a leading global player in the digital economy, is actively expanding its presence in the Arab market, collaborating with its tech giants, including Huawei and ZTE. This engagement extends beyond traditional infrastructure into high-tech and digital domains, elevating China-Arab cooperation to new heights. By providing cutting-edge technologies and solutions, these companies have earned the trust and respect of Arab nations, further enhancing bilateral digital economy collaboration. Additionally, Arab countries, such as Saudi Arabia and the UAE, have demonstrated strong commitments to digital infrastructure, adopting a pragmatic approach to high-tech advancements. These nations prioritize 5G and other emerging digital infrastructure, welcoming Chinese enterprises to contribute to their 5G initiatives and recognizing the vital role these companies play in strengthening their information and communications technology (ICT) sectors (Wang, 2022, p. 91).

In March 2023, China's diplomatic efforts led to the restoration of ties between Saudi Arabia and Iran, contributing to regional peace and stability. As Saudi Arabia's "Vision 2030" gains momentum, aiming to mitigate security threats posed by Western technology to its digital infrastructure, China is simultaneously overcoming Western barriers to its digital industry's global expansion. This convergence of efforts has fostered a growing willingness to collaborate on digital infrastructure between China and Saudi Arabia. Chinese firms, including FiberHome and CITIC Mobile, have achieved significant milestones in Saudi Arabia, with Huawei playing a pivotal role in the digital construction of the kingdom's future cities. Additionally, initiatives like the China-Arab States Expo are driving digital innovation cooperation, propelling China-Arab economic ties to new levels. Huawei and its counterparts are also enhancing partnerships in Dubai, contributing to the development of sustainable and intelligent data centers.

Unique Features of China-Arab Cross-Border E-Commerce Cooperation

E-commerce, a pivotal digital economy component, harnesses the internet and digital technologies to streamline online transactions, payments, and marketing. This sector has been a driving force behind the dynamic growth of China-Arab digital economy cooperation. The rapid expansion of e-commerce in Arab nations can be credited to several factors, including the modernization of digital infrastructure, a youthful and digitally active demographic, the rise of social media as a consumer platform, increased public trust in digital transactions, and favorable governmental policies. China's expertise in e-payment systems, digital ecosystems, and e-commerce has significantly propelled the development of China-Arab cross-border e-commerce and overseas warehouse services. This, in turn, has accelerated the digital transformation of traditional trade, encompassing e-commerce platforms, logistics services, and e-payment systems, thereby creating a distinctive cooperation model.

Chinese e-commerce platforms have become integral to the Middle East's digital marketplace, with cross-border imports playing a dominant role. Platforms like AliExpress, Shein, TikTok Shop, and Temu have gained significant traction in Arab markets, achieving an impressive 80% internet user penetration in the Gulf States[1], which has contributed to the region's robust e-commerce growth. The rise of China's social e-commerce model has further bolstered online shopping in the region, where diverse e-commerce channels have rapidly adopted social media as a key shopping medium, particularly driven by TikTok's live streaming and influencer marketing. Chinese logistics companies, such as iMile and J&T, have capitalized on their expertise in e-commerce logistics to establish comprehensive networks in the Middle East, expanding their market presence through extensive coverage, operational efficiency, and localization. Moreover, Chinese fintech firms have gained popularity in the Middle East for their mobile payment and e-wallet solutions. The successful implementation of YiwuPay in the Saudi Arabian and Dubai markets has further enhanced the region's digital commerce ecosystem.

Challenges to China-Arab Digital Economy Cooperation

The China-Arab partnership in building the Digital Silk Road encounters several challenges, including a difficult business environment in partner nations, the complexity of geopolitical dynamics, cybersecurity concerns, significant disparities in digital economy development, a scarcity of digital talent, and negative campaigns by Western countries. Among these, the complexity of geopolitics is an inherent aspect of Belt and Road cooperation. At the same time, uneven digital economy growth in the Arab region and a lack of digital talent remain critical barriers to deeper cooperation. Moreover, the digital divide within the Arab region and between China and the Arab world demands focused attention.

The digital divide in the Arab region is apparent across several dimensions, including overall digital competitiveness, network connectivity, and the availability of digital talent. According to the National Digital Competitiveness Index Research Report (2019)[2], released by Tencent Research Institute and Renmin University of China, which categorizes 139 countries into three tiers of digital competitiveness—leaders (ranked 1st to 30th), accelerators (31st to 100th), and starters (101st to 139th)—Arab nations demonstrate a significant gap. Among them, only the UAE ranks among the leaders, while 11 countries, including Saudi Arabia and Kuwait, fall into

[1] E-commerce in the Middle East gains momentum (international perspectives). Retrieved July 15, 2022, see http://world.people.com.cn/n1/2022/0715/c1002-32475935.html.

[2] National digital competitiveness index 2019. Retrieved April 22, 2020, from http://www.01caijing.com/viewer/pdf.htm?filePath=attachment/202004/B147EA6121BA448.pdf.

the accelerators category. The majority of Arab countries are classified as starters, with nearly half of the Arab nations falling into this category.

Network connectivity is crucial for the growth of the digital economy, with innovative technological expertise serving as a key driver. However, Arab countries display stark polarization in these areas, which, in turn, exacerbates uneven development across other sectors. For instance, GCC countries boast high network connectivity, while others lag significantly, impeding the advancement of e-commerce and e-government. Additionally, disparities in educational development and gender gaps contribute to a regional trend where Asian Arab countries possess higher human capital levels than their African counterparts, exacerbating social issues and widening the digital divide. The varying levels of economic development among Arab countries pose a challenge to alter the digital economy's trajectory in the short term. This disparity complicates the regional proliferation of successful cooperation models between China and certain Arab nations, thereby limiting the effectiveness of sharing the benefits of the digital economy across the region.

The digital divide between China and the Arab region is most apparent in the realms of digital infrastructure and human resources, marked by deficiencies in both "hard" infrastructure and "soft" capabilities within Arab nations. Enhancing digital infrastructure is a crucial prerequisite for advancing the digital economy and fostering transnational digital economic partnerships. The generally subpar state of digital infrastructure in Arab countries remains the principal barrier to China-Arab digital economic collaboration. While China's digital economy continues to surge ahead, driven by advancements in digital technology and leadership in 5G capabilities, many Arab countries are only beginning their digital journeys. Even the UAE, which leads the region in digital competitiveness, significantly lags behind China in this domain.

Furthermore, the inadequate conditions for nurturing digital talent in the Arab region have led to a weak R&D capacity in digital technology and a deficiency in the digital skills of the online population. While the UAE surpasses China in terms of human capital, the digital proficiency of internet users in many Arab countries remains alarmingly low, still in the nascent stages of "digital literacy". This shortfall severely hampers the region's ability to innovate and scale digital technologies. Consequently, these conditions not only obstruct the digital transformation of the Arab region but also limit the potential for deeper digital economic cooperation between China and Arab nations.

Prospect of China-Arab Digital Economy Cooperation

In an era marked by rapid technological advancements, the digital economy has become a powerful force driving global development. The China-Arab digital economy cooperation is at the forefront of this transformation, poised to reshape the economic landscape of both regions. This partnership is not a fleeting trend but a strategic initiative promising sustainable growth and mutual benefit.

Improving Digital Infrastructure to Strengthen the Hard Power of China-Arab Digital Economy Cooperation

The quality of digital infrastructure is pivotal to advancing a country's digital economy. Understanding the varied needs of Arab countries, China can strategically align its support to address these specific requirements. China has deepened its collaboration with Arab nations, particularly those with lower levels of digitization, by focusing on the "hardware" aspects of digital infrastructure. In the Arab region, broadband development remains a priority, with some countries still in the early stages of connectivity. For instance, Lebanon currently has less

than 10% of its mobile users connected to "4G" networks, with the immediate goal of establishing new stations for comprehensive network coverage. Similarly, although Morocco leads other African nations in "4G" deployment, it has yet to introduce "5G" technology. Leveraging its expertise in network construction and R&D, China can actively contribute to developing digital infrastructure in these countries. By enhancing internet and telecommunications services, China aims to bridge the digital divide both within the Arab region and between China and the Arab world, fostering greater interconnectivity and interoperability in these critical sectors.

Furthermore, China can deepen its collaboration with Arab countries that have achieved higher levels of digitization by focusing on the "software" aspects of digital infrastructure. A growing number of Arab nations are prioritizing cloud-based solutions. For instance, the UAE, a global leader in ICT development, seeks to further enhance cloud services and other advanced technologies. Similarly, Saudi Arabia has significantly increased its investments in cloud computing, driving market demand. As mobile communications in some Arab countries shift from government monopolies to competitive environments, Chinese digital enterprises are finding favorable conditions for growth. These companies can leverage their strengths to participate in building both software and hardware components of digital infrastructure, fostering a vibrant and cooperative digital ecosystem.

Growing Digital Talent Cultivation to Strengthen the Soft Power of China-Arab Digital Economy Cooperation

Collaboration between China and Arab countries in science and technology, particularly among the youth, presents significant human resource advantages. In China, individuals aged 39 and below constitute approximately three-quarters of the scientific and technological workforce[3], with young talent playing a pivotal role in innovation. Similarly, Arab youth are at the forefront of the region's digital transformation, comprising a substantial portion of the population in Arab countries. These nations highly value the cultivation of young scientific and technological talent, as evidenced by rising higher education enrollment rates. The rapid growth of young talent in both China and Arab countries has injected new momentum into China-Arab digital economy cooperation, promising a vibrant and collaborative future in science and technology.

To sustain this momentum, China and Arab countries should establish a deeply integrated community focused on mutually beneficial cooperation in science and education. Firstly, the development of online courses tailored for Arab youth should include both general science knowledge and specialized content in STEM (science, technology, engineering, and mathematics) fields. This initiative aims to elevate digital literacy and proficiency while encouraging greater participation of Arab women in the digital economy. Secondly, high-caliber Chinese digital enterprises can extend their expertise by providing digital education in Arab countries, nurturing a larger pool of digital talent. Thirdly, it is essential to deepen collaboration between Chinese and Arab universities through long-term cooperative agreements. This partnership could involve the exchange of educators, the joint establishment of specialized disciplines in the digital economy, and the organization of seminars focused on building digital capacity. These efforts are intended to enhance educational standards and teaching quality in digital economy-related fields across Arab countries.

Developing Smart Cities to Foster Innovation in China-Arab Digital Economy Cooperation

The concept of a smart city transcends simple urban informatization, representing a holistic initiative that utilizes technologies like the Internet of Things (IoT), cloud computing, big data, and blockchain to optimize

[3] China's scientific and technological human resources are characterized by youthfulness and obvious trends. Retrieved June 25, 2022, see http://finance.people.com.cn/n1/2022/0625/c1004-32456472.html.

urban management and development. This vision seamlessly incorporates these technologies into key areas of social life, such as public transportation, government services, healthcare, education, information security, market transactions, and environmental conservation. Undertaking such a comprehensive project poses significant challenges to the scientific and technological innovation capacities of Arab countries but simultaneously offers immense opportunities for China-Arab collaboration in smart city development.

In addressing the digital divide within the Arab region, China should tailor its smart city collaboration efforts by considering the diverse policies and technological advancements of individual Arab countries, ensuring more effective partnerships. The Smart City Index 2020[4] identifies Arab cities like Abu Dhabi and Dubai as global leaders in smart city initiatives. Specifically, Dubai has been at the forefront since 2014, launching initiatives such as "Smart Dubai" and "Dubai 2021" with the goal of becoming the world's smartest city. This forward-thinking approach positions Dubai as an ideal partner for China in developing new smart cities. Looking forward, China and Arab nations can combine resources to invest in infrastructure, advance R&D of emerging technologies, and promote innovation in areas like smart government, transportation, and healthcare. Furthermore, it is vital to assist less developed Arab countries by supporting the establishment of e-government services, optimizing government management, and elevating China-Arab cooperation in e-government to an international benchmark.

Expanding Cross-Border E-Commerce to Energize China-Arab Digital Economy Cooperation

E-commerce, as a rapidly expanding sector of the digital economy, has significantly reshaped the global economic landscape, altering both work and lifestyle patterns. It has emerged as a pivotal driver of China-Arab collaboration within the new digital economy. Although the digital economy in Arab countries is still in its developmental stages, these nations maintain a strong complementary trade relationship with China. Arab countries rank as China's seventh-largest trading partner, while China is the largest trading partner for Arab countries. As previously noted, Chinese e-commerce platforms have achieved 80% penetration among internet users in the six Gulf countries. With rising internet usage, youth connectivity, and online shopping rates in Arab countries, there is a marked shift from traditional trade to e-commerce, unlocking substantial opportunities for China-Arab cross-border e-commerce collaboration.

Moving forward, China-Arab cross-border e-commerce cooperation should focus on four strategic areas. Firstly, by leveraging social media platforms like live streaming e-commerce and influencer marketing, the goal is to transform online shopping into an experiential activity that resonates with Middle Eastern consumers, thereby establishing distinctive brand value. Secondly, addressing the prevalent regional preference for cash-on-delivery payments, which constitute approximately 60% of online purchases in the Middle East[5], is crucial. This can be achieved by enhancing trust in digital payment systems. Chinese fintech companies, backed by technological advancements and government initiatives, can work with local financial institutions to localize payment solutions. Thirdly, the digitalization and innovation of smart logistics in the Middle East should be accelerated by providing cutting-edge technology solutions that improve logistics tracking and data analytics. Lastly, the potential of the "Her" economy can be harnessed by understanding the needs of female consumers in the Middle East, particularly young women in sectors such as fashion, maternity products, and jewelry, which offer new growth avenues in the collaborative venture.

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[4] IMD. Smart city index 2020. Retrieved April 14, 2021, see https://www.imd.org/smart-city-observatory/smart-city-index.

[5] Middle East e-commerce wars are on the verge. Retrieved April 10, 2023, see https://www.thepaper.cn/newsDetail_forward_22400823.

Conclusion

China-Arab digital economic cooperation, advancing under the Digital Silk Road initiative, marks a deepening of bilateral relations and holds considerable promise for fostering high-quality development. While this collaboration presents significant opportunities, particularly in areas like digital infrastructure, e-commerce, and smart city development, it also faces challenges such as regional geopolitical tensions, the digital divide, and a shortage of skilled talent. Both sides must enhance policy alignment, invest in talent cultivation, and capitalize on mutual strengths in technology and innovation to navigate these obstacles and achieve high-quality development. By continually improving digital infrastructure, growing digital talent cultivation, and developing smart city initiatives alongside expanding cross-border e-commerce, China-Arab digital economic cooperation can become a cornerstone of broader regional integration, driving mutual growth and contributing to the stability and prosperity of both sides.

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