Chapter 18
Developing a Vibrant Entrepreneurship Ecosystem in Qatar: A Sustainable Pathway Toward the Knowledge-Based Economy?

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Abstract For countries that depend on nonrenewable resources such as oil and gas, economic diversification is vital to ensure sustainable and resilient economic development. In July 2008, the government of Qatar launched the long-term national strategy Qatar 2030 (QNV 2030), intending to transform Qatar into a knowledge-based economy capable of attaining sustainable development by 2030. Since then, the Qatari government has invested continually and implemented many policies to encourage innovation, entrepreneurship, the private sector, and the advancement of human capital competencies to turn the economy into a knowledge-based one. Indeed, entrepreneurship is a crucial engine for economic development, one of the essential engines of economic diversification and building a knowledge-based economy. Qatar has, therefore, made a significant determination to develop a flourishing entrepreneurial ecosystem, including establishing key institutions and organizations to support entrepreneurs, such as incubators and financial framework, as evidenced by the increasingly strong performances in key international indices published by multiple global organizations. Nevertheless, despite Qatar's desire to diversify its economic base, entrepreneurs still have to contend with some challenges. Some of these difficulties are inextricably linked to Qatar's features as a rentier state. This chapter aims to analyze the present state of the knowledge-based economy in Qatar with a focus on the entrepreneurial ecosystem. It has two objectives. Firstly, the chapter intends to investigate the features and recent development of Qatar's entrepreneurial ecosystem, especially after the COVID-19 pandemic. Second, the article intends to examine the dynamics and many challenges that shape this ecosystem.

Keywords Knowledge-based economy · Entrepreneurial ecosystem · Economic diversification · Policy · Governance · Qatar

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18.1 Introduction

The concept of a "knowledge-based economy" refers to industrialized countries' increasing dependence on knowledge, skilled labor, and innovation (OECD, 1996). Many perspectives hold that information and communication technology (ICT), innovation, research, and development (R&D), education, entrepreneurship, and the economic and institutional framework are critical pillars and drivers of the knowledge-based economy (Arundel et al., 2008). The pillars are intertwined, and establishing a solid knowledge economy requires high performance on each of them (Hvidt, 2015, 30). Entrepreneurship is rapidly acknowledged as a critical component of economic development, job creation, and competitiveness (Kirkwood, 2009).

Entrepreneurship may be described as the process of seeking, analyzing, and utilizing opportunities to develop new products and services (Shane & Venkataraman, 2000). Establishing a company is influenced by two major elements: personal factors connected to the entrepreneur's personal characteristics and environmental ones relating to the location (Martin & Osberg, 2007). Accordingly, the local context is crucial in understanding entrepreneurship since it is a socially rooted phenomenon resulting from a collaborative organizational effort (Thornton et al., 2011). Entrepreneurial activity is not an isolated occurrence but a network of people with unique functions (Drakopoulou & Anderson, 2007). Entrepreneurs are socially dependent on their operating settings (Granovetter, 1985). Most recently, in policy-makers circles, the concept of the entrepreneurial ecosystem has gained considerable traction (Alvedalen & Boschma, 2017; Isenberg, 2010; Malecki, 2011). According to Mason and Brown (2014), an entrepreneurship ecosystem is a "network of interconnected entrepreneurial actors, entrepreneurial organizations (e.g., firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies), and entrepreneurial processes that work together to connect, mediate, and govern the performance of the local entrepreneurial environment" (p. 5). An entrepreneurial ecosystem includes collaborative and fruitful interactions between various firms. Thus, the entrepreneurial ecosystem method starts with the enterprising person rather than the organization, highlighting the importance of the entrepreneurship setting (Stam, 2015; Stam & van de Ven, 2021).

Developing a knowledge-based economy and a robust entrepreneurial ecosystem are presently top priorities for economic diversification policies, especially in emerging and developing countries such as Arab and Gulf Cooperation Council (GCC) countries (Ben Hassen, 2021). Economic diversification is vital to guarantee sustainable economic development, particularly for countries that rely on nonrenewable natural resources like oil and gas, such as the GCC countries (Al Naimi, 2022; Al-Qahtani et al., 2022). Indeed, economic diversification is a vital component of sustainable development since it promotes structural and long-term change in the economy as well as other development pillars, such as social institutions (Jolo et al., 2022). Even though hydrocarbon industries still drive the GCC's economy, questions have been raised regarding the sustainability of resource-reliant models due to systemic shocks, resource depletion, and changing demographics and consumer

preferences (Mohamed et al., 2022). It is no longer certain that oil revenues will be sufficient to sustain oil economies in the short- to medium-term due to fluctuating oil prices and a fast rate of energy transition (Luciani & Moerenhout, 2021). For the GCC economies, sustainability involves adapting to changing conditions, keeping prior advances in income per capita for their citizens, and perhaps reducing the gap with the wealthiest countries (Luciani, 2021). Over the long term, the hydrocarbon sector's prospects are gloomy, and economic diversification is necessary (IMF, 2021). It is widely accepted that diversified economies are more sustainable than oil-exporting nations in the Gulf (Ben Hassen, 2022a; Luciani, 2021).

Moreover, in the context of the 2030 Agenda for Sustainable Development and the SDGs, economic diversification is also essential to reach Goal 8: "Promote inclusive and sustainable economic growth, employment and decent work for all." Economic diversification is especially tied to target 8.2, which intends to "Achieve higher levels of productivity of economies through diversification, technological upgrading and innovation, including through a focus on high value added and labour-intensive sectors." Simultaneously, entrepreneurship is linked to SDGs 4 and 8. Indeed, SDG target 4.4 aspires to significantly expand the number of young people and adults with appropriate skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship. Further, SDG target 8.3 aims to "Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services" (United Nations, 2015).

In fact, several GCC countries have made structural changes in recent decades to diversify their economies and transform them into knowledge-based ones (Ben Hassen, 2022b). In July 2008, the long-term national plan Qatar National Vision 2030 (QNV 2030) was established by the Qatari government to transform Qatar into a developed country ready for sustainable development by 2030 (GSDP, 2008). Since then, the Qatari government has invested continually and implemented many policies to encourage innovation, entrepreneurship, the private sector, and the advancement of human capital competencies to turn the economy into a knowledge-based one. Indeed, entrepreneurship is a crucial engine for economic development, one of the essential engines of economic diversification and building a knowledge-based economy. Qatar has, therefore, made a significant determination to develop a flourishing entrepreneurial ecosystem, including establishing key institutions and organizations to support entrepreneurs, such as incubators and financial framework, as evidenced by the increasingly strong performances in key international indices published by multiple global organizations.

This chapter aims to analyze the present state of the knowledge-based economy in Qatar with a focus on the entrepreneurial ecosystem. It has two objectives. Firstly, the chapter intends to investigate the features and recent development of Qatar's entrepreneurial ecosystem, especially after the COVID-19 pandemic. Second, the chapter intends to examine the dynamics and many challenges that shape this ecosystem.

18.2 The Current Qatari Economic Context and the State of the Economic Diversification Process

Since the early 1990s, Qatar has invested extensively in hydrocarbon production, particularly in liquefied natural gas (LNG) (Qatar National Bank (QNB), 2018). Qatar's per capita income has risen as the country has become a significant player in the LNG global industry (IMF, 2019). Furthermore, most industrial sectors, such as petrochemicals, are connected to oil and gas. Accordingly, oil and gas are crucial to most businesses and other economic activities. Even though non-hydrocarbon activity has expanded as a proportion of real GDP over the last decade, hydrocarbon-funded government projects continue to play a significant role (IMF, 2019). Consequently, Qatar's economy relies on oil and gas revenues to finance government expenditures and drive economic development since there are no taxes (Tok et al., 2020).

However, fluctuations in oil prices may cause a rise or fall in capital surplus and capital accumulation. Oil prices have fluctuated over the last 50 years (Baffes & Kshirsagar, 2015). For example, Brent's (oil) price plummeted below $50 in 2016 after doubling from 2009 to 2011 (IMF, 2019). In 2020, due to the COVID-19 pandemic, prices dropped 33%, from 61,41 dollars a barrel in 2019 to 41,26 dollars a barrel (World Bank, 2021). As a result, the existing economic situation is unsustainable (Ben Hassen, 2021). The recent drop in oil prices during the COVID-19 pandemic posed a significant challenge to the Qatari economy. Indeed, following a 12% increase between 2008 and 2012, growth slowed to 4.4% in 2013 and was expected to fall to 2.6% in 2019 (World Bank, 2020). Qatar transitioned from a budget surplus of 10.3% in 2015 to a deficit of 4.07% in 2016, its first deficit in 17 years. Meanwhile, government debt climbed from 35.8 to 47.6% of GDP (Schwab, 2017). Qatar faced its first recession in a generation in 2019, although by just −0.2%, because of the COVID-19 pandemic. Consequently, after a −3.6% recession in 2020, Qatar's economy started to recover in 2021, with a 1.5% growth rate and an estimated growth rate of 3.4% in 2022. Meanwhile, Qatar's budget deficit in 2021 is expected to be 0.9% of GDP, down from 3.6% the previous year, due to a rebound in hydrocarbon prices. Furthermore, the recent normalization of relations with its neighbors will benefit Qatar by increasing profits from its worldwide state-owned airline when transport connections resume. The resolution of the rift may potentially resurrect the hope of deeper GCC integration and regional crisis burden-sharing (IMF, 2021).

Globally, national lockdowns and social distancing measures have resulted in a considerable drop in natural gas use in 2020 (International Energy Agency, 2020). Qatar's export income has suffered due to its dependence on oil-linked gas contracts. Overall Qatari exports fell by 42.8% in June 2020 compared to the previous year (World Bank, 2020). There is also uncertainty in the LNG market, with fears of oversupply with new reserves coming from Australia and the USA, which could challenge Qatar's position (Focus Economics, 2020). Prior to the COVID-19 pandemic, Qatar was already in a period of economic transition.

Given the limitations of the traditional oil-based economy, Qatari authorities believe that the country needs a long-term strategy to lessen its reliance on hydrocarbon revenues and establish a more stable and diverse economy (Baabood, 2017). Indeed, diversification is vital for a significant commodity exporter like Qatar because it helps handle short-term shocks and prepares for long-term changes in the economic environment. Qatar's economy would be more resilient and better prepared for the future decades if it had a diversified range of economic activities, exports, and revenues (IMF, 2019).

In July 2008, the Qatari government established the long-term national plan Qatar 2030 (QNV 2030) to transform Qatar into a developed country capable of achieving sustainable development by 2030. It aims "at transforming Qatar into an advanced country by 2030, capable of sustaining its own development and providing for a high standard of living for all of its people for generations to come" (GSDP, 2008, 2). QNV 2030 identifies the country's long-term priorities and provides a context for establishing national strategies and action plans. The strategy rests on four interrelated and mutually reinforcing pillars of development: environmental, economic, human, and social (Table 18.1).

QNV 2030 was followed by two National Development Strategy (NDS), five-year plans, Qatar's first National Development Strategy 2011–2016 (NDS-1) and the second National Development Strategy (2018–2022) (NDS-2) (GSDP, 2011, 2018). The strategies were prepared to define concrete steps and results to resolve obstacles and advance QNV 2030 objectives (Ben Hassen, 2019).

Table 18.1 QNV 2030 pillars (GSDP, 2008)

Economic development	**Social development**
This pillar seeks to build a sustainable and diversified economy capable of maintaining a high quality of life for its people now and in the future The national vision will govern the Qatari economy, strike a balance between a knowledge-based and an oil-based economy, attract new investors, boost competitiveness, and encourage growth	This pillar aims to create a fair and supportive society founded on strong moral principles and to be willing to play an essential role in the partnership for sustainable development It requires a social welfare and protection system and women's empowerment by offering equal opportunities for all people in different fields such as education and employment
Human development	**Environmental development**
QNV 2030 aims to educate all Qatari citizens so that they can sustain a prosperous society This involves a high standard educational system and a modern healthcare system	To ensure a compromise between developmental needs and environmental preservation for future generations It involves managing the environment based on harmony between social development, economic growth, and environmental protection

18.3 Characteristics of the Entrepreneurship Ecosystem in Qatar: Strengths and Shortcomings

Since 1997, Qatar has established numerous institutions, incubators, organizations, and funding structures to aid entrepreneurs and create an effervescent entrepreneurship ecosystem (Ben Hassen, 2019). However, despite this success, entrepreneurs in Qatar still face some barriers and difficulties (Ben Hassen, 2021).

18.3.1 Strengths of the Entrepreneurship Ecosystem in Qatar

Firstly, the main strength of the entrepreneurship ecosystem in Qatar is the strong governmental implication. Indeed, government actions have influenced a variety of facets of the knowledge-based economy. As Rubin (2012) mentioned, "Qatar has set the bar high with its goal of becoming a knowledge-producing economy at record speed. However, the country holds some strong cards: a clear vision, highly committed leadership, and abundant resources to devote to the cause" (4). Qatar has intensely focused on the relevance of small and medium-sized businesses (SMEs) and entrepreneurship in the state's overall development goals. Encouraging SMEs and entrepreneurs was made a major priority by the highest levels of the state institutions (Tok et al., 2020).

Consequently, the Qatari entrepreneurial ecosystem is primarily the product of substantial government involvement, with the government serving as the primary driver. This leadership is motivated by a desire to diversify the economy, as stated in QNV 2030 and NDS-1. QNV 2030 recognizes the significance of entrepreneurship in achieving economic diversification and reducing Qatar's reliance on hydrocarbon sectors (GSDP, 2018). According to NDS-1, diversification entails strengthening the business environment and private sector development, fostering entrepreneurship, and restructuring the labor market (GSDP, 2011). As Qatar attempts to meet the objectives outlined in QNV 2030 and transition from a carbon-export-based economy to a knowledge-based one, the private sector is expected to play a key role (Mehrez, 2019). Indeed, since 1997, Qatar has established numerous institutions, incubators, organizations, and funding structures to aid entrepreneurs and create an effervescent entrepreneurship ecosystem, such as the Qatar Development Bank, Qatar Business Incubation Center (QBIC), Social Development Center, Silatech, Center for Entrepreneurship (Qatar University), Qatar Science and Technology Park (QSTP), Enterprise Qatar, and Qatar Foundation (QF) (Ben Hassen, 2019, 2020) (Table 18.2).

In fact, the vast majority of organizations in Qatar dedicated to fostering entrepreneurship were founded or are funded by the government as part of a complex web of initiatives and policies (Ennis, 2015). Further, the Qatari government is making significant efforts to improve the legal and economic environment to decrease business risk and encourage start-ups (Sahli, 2021). Consequently, start-ups and

Table 18.2 The leading entrepreneurship support organizations in Qatar (Ben Hassen, 2019)

Organization	Est. Date	Mission and goals
Social development Center (Nama Center)	1996	Nama Center helps broaden the opportunities available to young people, develop their capacity, and empower them
Qatar Development Bank (QDB)	1997	Supporting Qatari entrepreneurs to help contribute to the diversification of the local economy by successful small and medium-sized businesses able to participate in international markets
Qatar Science and Technology Park (QSTP)	2005	Enabling an open innovation, research, and entrepreneurship ecosystem
Injaz Qatar	2007	Creating an SME environment conducive to a creative entrepreneurial spirit and business development helps SME achieve business excellence
Enterprise Qatar	2008	Being the focus of SMEs and the locomotive of Qatar's economic diversification process
Silatech	2008	Silatech is a global development organization that links young people to economic opportunities and jobs through creative business development and employment programs
Digital Incubation Center (DIC)	2011	Promoting ICT innovation in Qatar, especially among millennials at the early stages
Bedaya Center	2011	The Bedaya Center gives Qatari young people access to several programs, including career advice, developing employment skills, and entrepreneurship
Qatar Business Incubation Centre (QBIC)	2013	The QBIC is a special incubation center offering support resources for entrepreneurs that have an idea of starting a new company or are willing to expand an established business
Center for Entrepreneurship (QU)	2013	Help students and the QU community to grow and turn business ideas into successful start-ups

SMEs in Qatar already have access to a robust ecosystem of public assistance from various government departments and organizations. As a result of careful planning, Qatar has identified high-potential industries such as smart manufacturing, fintech, sports-tech, and fashion and design as areas where the private sector can use its capabilities to build global competitiveness and produce new revenue streams (Oxford Business Group, 2021).

More recently, the COVID-19 pandemic prompted a significant reaction from the Qatari government, which has made efforts to prevent the loss of new and developing businesses while also aiding entrepreneurs in adapting to the new economic reality. Government action to safeguard employees and consumers of new and expanding businesses has also been taken, and a significant increase in the digital and online delivery of regulations for entrepreneurs (QDB, 2021a).

Since 1995, these policies and measures have contributed to developing entrepreneurial activity in Qatar and facilitating the process. From 2016 to 2020, the Global Entrepreneurship Monitor (GEM) data collection provides a comprehensive yet brief assessment of Qatar's entrepreneurial development. There was a noticeable rise in the number of people in Qatar launching or operating new firms (Hawi et al., 2022). Further, the number of persons in Qatar engaged in early-stage entrepreneurship has consistently climbed since 2017, and the percentage of established firm ownership has hit an all-time high since the benchmark survey was done in 2016. Furthermore, the rate of Entrepreneurial Employee Activity has almost doubled since 2019. As the rate of company discontinuation in Qatar decreases, so does the rate of entrepreneurial activity (QDB, 2021b).

Consequently, in 2020, Qatar was ranked third in the GCC member states and the Middle East and North Africa (MENA) region, and eighth globally, according to the National Entrepreneurship Context Index (NECI).[1] It scored slightly lower than the United Arab Emirates (UAE) and Saudi Arabia, which ranked fourth and seventh globally, respectively (QDB, 2021a). Moreover, in 2021, start-ups in Qatar received record-level funding, and venture investment in Qatar reached a new high, with QAR 69 million invested in start-ups, a 92% increase over the previous year's amount (KPMG, 2021; QDB, 2021b). Also, 58% more money was invested in technology-based initiatives in 2021 than in the previous year. Further, there has been an increase in interest and investment in Qatar's venture capital (VC) ecosystem from private individuals, corporations, and international corporations. In 2021, more than 90% of all start-up investments in Qatar came from private and foreign investors. While private and international corporations made up about half of all VC investments in 2016, there was an encouraging rise in interest and engagement from non-governmental entities (QDB, 2021b). Investors in Qatar decided to fund businesses such as e-commerce, delivery services, and fintech, which witnessed increased demand throughout the pandemic and kept the top three rankings in terms of transaction volume and value. Additionally, entrepreneurs in the e-commerce industry received almost 60% of the total capital obtained in Qatar (KPMG, 2021).

Second, entrepreneurship in Qatar is fueled by opportunities. Qatar was placed eighth out of 54 participating countries for opportunity-driven early-stage entrepreneurs in 2017. Although 82.4% of early-stage enterprises in Qatar are driven by opportunity, this is more than any other MENA area, including the UAE (QDB, 2017). Indeed, in 2020, even though many businesses have been negatively affected

[1] GEM launched the National Entrepreneurial Context Index (NECI) in 2018, which measures an economy's entrepreneurship environment. The NECI informs policymakers, practitioners, and other important stakeholders on the overall strength of the entrepreneurial ecosystem (QDB, 2021a).

by the pandemic, COVID-19 has sparked an uptick in new company ventures in Qatar. According to the GEM Qatar Report 2020, the Total Early-stage Entrepreneurial Activity (TEA) rate rose from 14.7% to 17.2% throughout 2020. About 45.6% of the respondents who are not already participating in entrepreneurial activity want to become so within the next three years. Half of these people cited COVID-19 as an influence. Four out of ten early-stage entrepreneurs (41.9%) and one-third of experienced company owners feel that COVID-19 has presented new business prospects they want to explore. One out of every four persons polled in the GEMS' Adult Population Survey knows at least one person in Qatar who has launched a company due to the coronavirus outbreak (QDB, 2021a). Two variables might account for this. First, Qatar has one of the lowest unemployment rates globally among Qataris and expats. During the first quarter of 2021, the number of job seekers in Qatar reached 3,138. In the first quarter of 2021, the unemployment rate was 0.2%, compared to 0.1% in the first quarter of 2020 (Planning & Statistics Authority, 2021). Second, few jobless expats remain in the country since residency permits are tied to work (QDB, 2017).

18.3.2 Obstacles of the Entrepreneurship Ecosystem in Qatar

Firstly, human capital is the most significant impediment to entrepreneurship in Qatar. The lack of human resources and the mismatch between the capabilities needed by the sector and those offered by the educational system are the two most significant constraints faced by start-ups in this respect.

Indeed, start-ups face a shortage of technology-related human resources, particularly engineers. Most new businesses voiced concerns about lacking skilled human resources in their respective industries (Ben Hassen, 2020). As a matter of fact, this is a recurring problem in Qatar's educational system. Since 1995, Qatar has made significant efforts to strengthen its educational system, investing heavily and implementing several reforms (Koc & Mohamed, 2017). Nonetheless, Qatar continues to lag in educational achievement, particularly in science, technology, engineering, and mathematics (STEM) sectors (Said, 2016), which are considered the main components of achieving a knowledge-based economy (Durazzi, 2019). Although Qatari 4th and 8th-grade students showed growth in scientific performance in the Trends in International Mathematics and Science Study (TIMMS) and the Program for Worldwide Student Assessment (PISA), they remain far behind the international average (Said, 2016). Furthermore, an increasing number of high school graduates cannot enter university since their academic credentials fall short of most universities' requirements. Many secondary institutions use Arabic as a teaching medium (Berrebi et al., 2009). As a result, many students have lost opportunities to pursue their education due to language barriers, which significantly setback the country's aim of growing human capability (Mohamed et al., 2022).

In addition, though just a tiny fraction of Qatari students are interested in a career in the STEM fields, most of them are driven to work in the government (Sellami

et al., 2017). There are several advantages to working in the public sector, including better pay, less stress, and less responsibility (Forstenlechner & Rutledge, 2010). Consequently, Qataris have a low level of involvement in the private sector. Hence, students are no longer enrolling in STEM professions at a pace that will contribute to Qatar's economic advancement in the future (Said, 2016). A decline in science and math enrollment at the postsecondary level must be reversed to meet better the demands of knowledge-based economy companies (GSDP, 2011, 52).

Second, according to the GEM study of 2016 (QDB, 2017), 77.3% of the Qatari adult population feels that entrepreneurs have a high degree of social standing and respect, and 65.9% believe that establishing a new firm is a suitable career option. However, in 2020, over four out of ten persons who perceive the strong potential for entrepreneurship said they would be discouraged from establishing a firm due to a fear of failure. Qatari citizens are more likely than expats to say they would be hesitant to establish a company because they fear failure (44.8% and 39.6%, respectively) (QDB, 2021a). The fear of failure may deter some would-be entrepreneurs from beginning a firm. In fact, company ownership is seen highly by Qatari society, but only as a source of additional revenue. In Qatar, the "passive entrepreneur" is the most popular kind of entrepreneur. The entrepreneur has a stable full-time job in the public sector and runs a side company to supplement his income. It is risky for him to quit his work and launch his own firm as a full-time entrepreneur.

Thirdly, access to finance is a major barrier for many Qatari entrepreneurs. Indeed, according to IMF (2019), SMEs get just 2% of total credit in Qatar, indicating that there is still room for improvement in inclusion and fostering entrepreneurial activity in the country. Indeed, in 2020, financing options for new and expanding businesses via private lenders such as crowdsourcing (3.6) and initial public offerings (IPOs) got the lowest scores from experts (QDB, 2021a). In fact, business owners are often unable to get appropriate financing. In Qatar, most new businesses are backed by informal financing channels (ex., family, relatives, friends, work colleagues, neighbors, strangers, etc.) (Kebaili et al., 2015). In 2020, 74.4% of early-stage entrepreneurs utilized personal funds to fund their businesses, 28.8% used personal loans, and 14.8% used commercial loans (QDB, 2021a). However, the fact that Qatar's GDP is the highest in the world could make it seem contradictory that the country has restricted access to funding (Mehrez, 2019). This problem might be explained by the culture of banks in Qatar and the GCC in general. Most banks in Qatar prefer to invest in more secure businesses, such as real estate. As explained by the senior regional economist at HSBC: "most banks in GCC states are traditionally unwilling to lend to small, little-known firms, preferring instead the security and predictability of lending to large firms, such as those with state connections" (Arabian Business, 2012). Simultaneously, new businesses in Qatar confront exorbitant costs. Rent, workforce, and the initial investment in materials and equipment are all costly (Kebaili et al., 2015). Further, to Komalasari (2016), several external factors impact entrepreneurship in Qatar, including the difficulties of obtaining commercial facilities or offices at a fair price, the availability of finance,

especially "angel investors," and the complexity of business regulations. Accordingly, 49% of the entrepreneurial experts surveyed in Qatar believe that giving more significant financial support to start-ups and expanding enterprises may boost the country's entrepreneurial environment (QDB, 2021a).

18.4 Conclusion

This chapter aims to analyze the present state of the knowledge-based economy in Qatar with a focus on the entrepreneurial ecosystem. It has two objectives. Firstly, the chapter intends to investigate the features and recent development of Qatar's entrepreneurial ecosystem, especially after the COVID-19 pandemic. Secondly, the article intends to examine the dynamics and many challenges that shape this ecosystem.

Economic diversification is vital in achieving sustainable economic development, especially for countries relying on nonrenewable natural resources, such as oil and gas, in the case of the Gulf Cooperation Council (GCC) countries. Moreover, the global crisis caused by the COVID-19 pandemic underscored the significance of boosting resilience to adverse shocks (Ben Hassen, 2022b). Indeed, the pandemic highlighted the need to promote non-hydrocarbon sectors by strengthening the fundamental pillars of the knowledge-based economy: ICT, innovation, R&D, education, entrepreneurship, and the economic and institutional regime. Since 1995, the Qatari government has invested continually and implemented several policies to encourage innovation, entrepreneurship, the private sector, and the advancement of human capital competencies to turn the economy into a knowledge-based one. Meanwhile, Qatar has made a significant attempt to build a dynamic entrepreneurship ecosystem, including establishing important institutions and organizations to assist entrepreneurs, such as incubators and funding structures, as evidenced by rankings published by various international organizations. Consequently, Qatar is outperforming the other Middle Eastern countries regarding entrepreneurship development, offering more chances for both aspiring and full-time entrepreneurs. Furthermore, the COVID-19 pandemic increased the country's entrepreneurial drive, resulting in more start-ups and many projects. Therefore, the Qatari entrepreneurial ecosystem is primarily the product of substantial government involvement, with the government serving as the primary driver. Meanwhile, the majority of early-stage technical enterprises are motivated by opportunities. Nevertheless, despite Qatar's desire to diversify its economic base, entrepreneurs still have to contend with several challenges. Some of these difficulties are inextricably linked to Qatar's features as a rentier state.

Firstly, human capital is the primary impediment to entrepreneurship. A minority of Qatari students are considering a future career within one of the STEM disciplines, while many remain interested in public sector employment. Governments are the primary employer of local labor in the rentier state because they provide access to rentier capital for a portion of the population (Beblawi, 1987; Gray, 2011). Further,

there is a gap between the skills demanded by technical start-ups and those offered by the educational system. Accordingly, the development of STEM knowledge, skills, and competencies must be prioritized if Qatar's educational system provides a workforce capable of fulfilling the demands of contemporary society and the country's fiercely competitive job market (Sellami et al., 2017).

Secondly, in terms of social values and culture, our findings show that company ownership is seen positively by Qatari society, but only as an additional source of income. The "passive entrepreneur" is the most popular kind of entrepreneur in Qatar. The entrepreneur has a stable full-time job in the public sector and a side company to supplement his income. Furthermore, there is a significant disparity between people who wish to start a business and those who actually do so. This may be explained by a fear of failure, preventing some prospective entrepreneurs from launching a firm.

Thirdly, access to finance is a significant barrier for many Qatari entrepreneurs. The culture of Qatari banks explains this challenge. Most Qatari banks prefer to invest in more secure ventures, such as real estate. This problem is also linked to the rentier model, which encourages high- and quick-return investments in real estate and financial speculation over productive investments in prospective value-added industrial sectors, which often take longer to reap the rewards (Ennis, 2015; Gray, 2011).

According to Ennis (2015), the development of Qatar's entrepreneurial activities is entangled between an international capitalist policy agenda and a national economy hampered by two interrelated dependencies challenging to correct: hydrocarbons and foreign labor addictions. The author also points out that entrepreneurship has perpetuated the rentier state structure, causing a contradiction between economic reform and the existing structural challenges. Further, Qatar's transition to a knowledge-based economy is facing a critical structural challenge: the rentier system, which is hegemonic within the socio-economic and political system in Qatar and the GCC region in general, exposes many limitations (Ennis, 2015). With little private-sector participation, the rentier model makes the government the key player in the knowledge-based economy, which aligns with the government's position in the rentier state (Beblawi, 1987).

The shift to a knowledge-based economy is a complex process that requires the participation of several stakeholders from all sectors (innovation, R&D, education, entrepreneurship, companies, etc.). As a result, a successful transition requires a national plan that avoids the "silos mindset," which involves all stakeholders with defined aims, actions, and missions for each, encouraging collaboration and information sharing. In reality, inadequate sectoral coordination and integration is a critical institutional issue in Qatar owing to a lack of "planning culture" and "teamwork," as well as a silo mindset (GSDP, 2011). Further, as the IMF (2019) outlined, exports and activity diversification may benefit from structural reforms and sector-specific initiatives. In sectors with opportunities for exports and innovation, sector-specific policies should be implemented. Developing knowledge in specific clusters, such as food and water security, should be the focus since these are two significant challenges in Qatar and the GCC region (see Chaps. 11 and 12).

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