

The entrepreneurship ecosystem in the ICT sector in Qatar: local advantages and constraints

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Dynamics of entrepreneurship ecosystem in Qatar

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Received 10 April 2019
Revised 28 November 2019
Accepted 10 February 2020

Abstract

Purpose – The purpose of this paper is to analyze the characteristics and dynamics of the entrepreneurship ecosystem in the ICT sector in Qatar.

Design/methodology/approach – The methodology of this research is based on a literature review and information collected through semistructured interviews with the different stakeholders involved in the entrepreneurship ecosystem in the ICT sector in Qatar.

Findings – The results show that two opposite forces shape the entrepreneurship ecosystem in the ICT sector in Qatar. On one hand, the strong determination and intervention of the Qatari government to diversify the economy by creating a vibrant ecosystem in the ICT sector. On the other hand, entrepreneurs in this sector are still facing some barriers and difficulties, and those issues are tightly related to Qatar's economic characteristics as a rentier state whose economy is driven by hydrocarbon resources.

Originality/value – These findings contribute to the clarification and critical analysis of the current dynamics of the entrepreneurship ecosystem in the ICT sector in Qatar, which would have several policy implications.

Keywords Qatar, ICT, Entrepreneurship ecosystem, Economic diversification, Rentier state

Paper type Research paper

Introduction

This paper deals with characteristics and the dynamics of the entrepreneurship ecosystem in the information and communication technology (ICT) sector in Qatar. It shows that two opposite forces shape this ecosystem. On one hand, the strong determination and intervention of the Qatari government to diversify the economy by creating a vibrant ecosystem in the ICT sector. On the other hand, entrepreneurs in this sector are still facing some barriers and difficulties, and those issues are tightly related to Qatar's economic characteristics as a rentier state whose economy is driven by hydrocarbon resources.

Qatar, one of the Gulf Cooperation Council (GCC) countries, is a small country located in the Persian Gulf covering an area of approximately 11,437 km², with a population of 2.7 million. Until the 1950s, Qatar's economy depended mainly on fishing, pearling, and trading. The exploitation of Qatar's oilfields started in 1949. Since then, oil export revenues have risen exponentially and supported largely Qatar's economy (El Mallakh, 1985). The oil boom in the 1970s transformed the country's physical, social, cultural, and demographic status. Extensive investments in infrastructure, education, and health services contributed to rapid economic growth (Economic and Social Commission for Western (ESCWA), 2001; Ibrahim and Harrigan, 2012). Today, Qatar has the third-largest gas reserves in the world, after Iran and Russia. The hydrocarbon sector is the cornerstone of Qatar's economy and in 2017 constituted 80 percent of export earnings and 90 percent of government revenues (World



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The publication of this article was funded by the Qatar National Library.

Journal of Small Business and Enterprise Development
Vol. 27 No. 2, 2020
pp. 177-195
Emerald Publishing Limited
1462-6004
DOI 10.1108/JSBED-04-2019-0119

Bank, 2017). Enormous hydrocarbon reserves compared with a modest national population have made Qatar one of the richest countries globally, with a GDP per capita (PPP at constant prices) of US\$115,979 in 2018 (World Bank, 2019).

However, the high volatility of oil prices poses strong challenges to the Qatari economy. After a fiscal surplus of 10.3 percent in 2015, Qatar displayed a deficit of 7.6 percent of GDP in 2016, the first in 17 years. After experiencing a 12 percent growth rate, the highest in the world between 2008 and 2012, the Qatari GDP grew 2.2 percent in 2016 and 2 percent in 2017 (World Bank, 2017). In fact, for oil-producing countries, such as Qatar, a drop in oil prices has major effects on consumption, production, and public finance, resulting in an uncertain economic environment (Miniaoui and Schiliro, 2016). Consequently, there is a general consensus among Qatari leaders that the country needs a long-term strategy to reduce its dependence on gas and oil revenues and create a diversified economy to reduce instability (Baabood, 2017). Since 1995, Qatar's economy has been undergoing a critical transformation toward a diversified economy, with a focus on the knowledge-based economy. Qatar 2030, the national long-term development strategy, explicitly promotes economic diversification by transforming into a knowledge-based economy to sustain growth and prosperity (General secretariat for development planning (GSDP), 2008). Qatar 2030 aims to transform the country into a knowledge-based economy, making the country a regional hub for knowledge and high-value industrial and economic activities.

This transition toward a knowledge-based economy has become closely related to economic diversification and economic policies that support innovation, technology development, entrepreneurship, the private sector, human capital skills development, and ICT infrastructure development (Mishrif, 2018). Many of the different perspectives of a knowledge-based economy view ICT as the principal driver of a fundamental technoeconomic shift toward a knowledge-based economy. The ICT sector enables economic diversification and growth, drives innovation and entrepreneurship, and creates employment opportunities. It is an important catalyst for social transformation and economic progression (European Bank for Reconstruction and Development (EBRD), 2019). ICT is considered an important sector in Qatar. Besides, entrepreneurship activities are pillars of economic growth and the transition toward a knowledge-based economy. Governments play an important role in this transition by building an innovative ecosystem with efficient IT infrastructure, a highly competitive entrepreneurial environment and a life-long learning system (Faghih and Sarfaraz, 2014).

Since 2008, Qatar invested heavily in state-of-the-art ICT infrastructure, skills development, ICT products and services, and e-government, which created a positive impact on all sectors. Qatar has made also major efforts to create a vibrant entrepreneurship ecosystem with the creation of significant institutions and organizations to help entrepreneurs: incubators and funding structures, and so on, including the Qatar Development Bank (QDB), Enterprise Qatar, Silatech, Social Development Center, INJAZ Qatar, Center for Entrepreneurship (Qatar University), Qatar Business Incubation Center (QBIC), Digital Incubation Center (DIC), Qatar Science and Technology Park (QSTP), and Qatar Foundation (QF) (Ben Hassen, 2019). Consequently, in 2018, according to the Global Entrepreneurship Index, Qatar was ranked first in GCC countries, second in the MENA region, and 22nd position globally (Acs *et al.*, 2018). However, despite this success, entrepreneurs in the ICT sector in Qatar are still facing some barriers and difficulties (Ben Hassen, 2019). These issues have not been fully explored. It appears that some of these issues are tightly related to Qatar's characteristics as a rentier state, but this remains to be shown, and this is what this paper aims to do here.

Based on the concept of the entrepreneurship ecosystem, this paper has two objectives. Firstly, the paper aims to study the characteristics and the recent evolution of the entrepreneurship ecosystem in the ICT sector in Qatar. Secondly, the paper aims to analyze the dynamics and the different forces that shape this ecosystem.

As mentioned earlier, our results show that two opposite forces shape the entrepreneurship ecosystem in the ICT sector in Qatar. On one hand, the strong intervention of the Qatari government to diversify the economy through creating a vibrant entrepreneurship ecosystem in the ICT sector. On the other hand, entrepreneurs in the ICT sector in Qatar are still facing some barriers and difficulties, and those issues are tightly related to Qatar's economic characteristics as a rentier state whose economy is driven by the exploitation of natural gas and oil resources. Before we expose the results, we present a brief literature review and then our methodology.

Literature review: entrepreneurship ecosystem in hydrocarbon-dependent economy

Entrepreneurship is one of the most dynamic approaches to socioeconomic transformation and development. It is intimately related to private sector development, micro, small, and medium-sized enterprise policies, job creation, innovation, and competitiveness (Audretsch *et al.*, 2006). Entrepreneurship could be defined as a process in which opportunities for creating new goods and services are explored, evaluated, and exploited (Shane and Venkatamaran, 2000). The decision to start a business depends on two main factors: personal factors related to the entrepreneur personal traits and personality (tolerance of risk and failure, preference for self-employment, need for achievement, etc.) (Schmitt, 2004; Solesvik *et al.*, 2014) and external factors related to the location. "Entrepreneurial activity is then the product of an interaction between an individual's perception of an opportunity, and the capacity, including motivation and skills, to act upon this, set in the distinct conditions of the environment in which that individual is located or locates themselves." (Global Entrepreneurship Monitor (GEM), 2018, pp. 20).

To understand entrepreneurship, the local environment is important because entrepreneurship is not an isolated phenomenon (Drakopoulou Dodd and Anderson, 2007; Thornton *et al.*, 2011), but it is socially embedded (Ben Letaifa and Goglio-Primard, 2016), and "the consequence of collective organizing process that results from social interaction and collaboration" (Thornton *et al.*, 2011; p. 106). Entrepreneurs depend socially on the context in which they operate (Granovetter, 1985). One emerging approach is "entrepreneurial ecosystems" (Isenberg, 2010; Malecki, 2011). The entrepreneurial ecosystems concept has attracted a lot of attention, especially in policy (Alvedalen and Boschma, 2017). Mason and Brown (2014) define the entrepreneurship ecosystem as a set of interconnected entrepreneurial actors, entrepreneurial organizations, institutions, and entrepreneurial processes, which coalesce to connect, mediate, and govern the performance within the local entrepreneurial environment. The concept of entrepreneurship ecosystem is based on fundamental idea stipulating that: "The place that entrepreneurship takes within is seen as having a crucial impact over the entire entrepreneurship process, from the ability and willingness of nascent entrepreneurs to start a firm to their ability to find venture capital and eventually structure an exit from the firm." (Stam and Spigel, 2017; p. 408). An entrepreneurial ecosystem implies cooperative and productive relationships among different organizations. The entrepreneurial ecosystem concept emphasizes that entrepreneurship takes place in a community of interdependent actors and the systemic conditions are the heart of the ecosystem (Stam, 2014). Consequently, entrepreneurship takes place within a specific social, cultural, political, and economic context that may encourage or discourage that activity and make that particular context unique. In other words, place matters (GEM, 2018).

Different scholars and international organizations tried to define the most important attributes of a successful ecosystem (Feld, 2012; Isenberg, 2010). Feld (2012) states that there are nine attributes of successful entrepreneurial ecosystems: leadership, intermediaries, network density, government, support services, engagement, companies, and capital. Isenberg (2010) states that there is no particular formula for creating a successful entrepreneurial ecosystem. However, public leaders should follow nine key principles that

will help build an entrepreneurial ecosystem such as “Stop emulating Silicon Valley,” “Shape the ecosystem around local conditions,” “Engage the private sector from the start,” “Don’t over-engineer clusters; help them grow organically,” and so on. According to the [World Economic Forum \(2013\)](#), the entrepreneurship ecosystem is based on eight pillars: accessible markets, human capital/workforce, funding and finance, support systems/mentors, government and regulatory framework, education and training, major universities as catalysts, and cultural support. We can conclude that entrepreneurs require external macro- and microenvironmental factors, for their projects to be successful and sustainable.

While there are numerous studies about the characteristics of the entrepreneurship ecosystems in OECD economies, studies about this field in the GCC regions are scarce. Research studies on entrepreneurship ecosystems have focused almost exclusively on ecosystems in developed economies, precisely on successful case studies such as Silicon Valley or Boulder, Colorado ([Stram and Spigel, 2017](#)), and studies on emerging economies have been few ([Roundy, 2017](#)). Furthermore, few studies were interested in the characteristics of the entrepreneurship ecosystem in hydrocarbon-dependent economies such as the GCC region or Qatar. Indeed, Qatar’s social, economic, and political contexts are totally dissimilar from Eastern or Western setups ([Kebaili et al., 2017](#)); studying entrepreneurship in Qatar needs a deep understanding of its economic characteristics. The purpose of the present research is to bridge the literature gap in this area by investigating the characteristics of the entrepreneurship ecosystem in the ICT sector in Qatar.

Indeed, the topics of entrepreneurship ecosystem and entrepreneurship, in general, are new in Qatar and there are rare studies related to entrepreneurship. Most of the existent studies focus merely on some aspects of entrepreneurship. According to [Mehrez \(2019\)](#), four main obstacles were found as major obstacles to entrepreneurship in Qatar. These obstacles include bureaucratic requirements, limited access to funding, restrictive and biased legal conditions, and social and cultural constraints. For [Kebaili et al. \(2015\)](#) and [Kebaili et al. \(2017\)](#), seven factors were identified as the main barriers to start-up new business activities among Qataris, which are: the nonavailability of funds, risk avoidance, fear of failure, market barriers, knowledge barriers, stress avoidance, and attitude toward change. [Komalasari \(2016\)](#) shows that entrepreneurship in Qatar is affected by many external factors: finding commercial spaces or offices with reasonable cost, access to financing including “angel investors,” the complexity and inconsistency of processes for setting up new businesses, and the inconsistency of business regulations.

For [Ennis \(2015\)](#), the promotion of small and medium-sized enterprises (SMEs) in Qatar is wedged between an international neoliberal policy agenda and a national economy circumscribed by two interrelated path dependencies that are difficult to correct – national addictions to hydrocarbon revenue and foreign labor. The author explains also that entrepreneurship support has perpetuated the rentier state system, creating a contradiction between economic reform and the structural logic of the economy. [Tok \(2018\)](#) highlighted that Qatar represents how state-led entrepreneurship efforts struggle with a variety of challenges in a way that reveals the limitations and potentials of this process ([Tok, 2018](#)). Further, [Tok \(2018\)](#) argues that low oil prices, regional dependence on hydrocarbons, and trends in economic diversification signal GCC states’ preference to bolster their rentier systems with additional state revenue streams. Consequently, studying entrepreneurship in Qatar needs a deep understanding of its socioeconomic characteristics with a backdrop, the rentier state theory (RST).

Since the oil boom of the 1970s, social, political, and economic characteristics of GCC countries have been studied based on the RST. In fact, oil has played a significant role in the geopolitics and economics of the region and has arguably shaped state-building development programs and produced a rentier economy ([Crystal, 1990](#)). The concept of the rentier state has been one of the more frequent and functional descriptions of the economic environment in the GCC region ([Ennis, 2013](#)). The RST was first developed by [Mahdavy \(1970\)](#). It has since been developed and popularized by other scholars, especially Giacomo Luciani and Hazem

Beblawi (Gray, 2011). Those scholars outlined three basic characteristics of a rentier state. First, for Mahdavy (1970) in a rentier state, the economy relies on external revenue from the rent of nonreproducible resources rather than its productive capacity. The state does not have to collect taxes from its citizens. Second, in a rentier state, “Only few are engaged in the generation of this rent (wealth), the majority being only involved in the distribution and utilization of it.” (Beblawi, 1987; p. 51). The principal recipient of the external rent is the state’s government, which in turn distributes the rent to its citizens. Accordingly, the rentier state is highly allocative, by providing generous benefits to its citizens in different forms: land allotment, housing, public sector employment, free education, health care, and goods subsidization (Ennis, 2013). Third, this leads to a specific mentality of the citizens in the rentier state: the “rentier mentality”. Beblawi (1990, pp. 87) defines the rentier mentality as: “A psychological condition with profound consequences for productivity where contracts are given as an expression of gratitude rather than as a reflection of economic rationale.” Those characteristics may affect entrepreneurship and the economic environment in different ways, but this remains to be shown, and this is what we aim to do here. Consequently, the main question of this paper is: how the economic and the social characteristics of Qatar as a rentier state had shaped the entrepreneurship ecosystem in the ICT sector?

The state of the ICT sector in Qatar

ICT is considered an important sector in Qatar. Since 2008, Qatar invested heavily in ICT infrastructure, skills development, ICT products and services, and e-government, which created a positive impact on all sectors. In addition, winning the 2022 FIFA World Cup bid has fueled a renewed focus on ICT investments (Ministry of Transport and communication, 2014). According to the International Telecommunication Union (2017), Qatar ranked 39th globally on the ICT Development Index (IDI). Furthermore, a series of studies surveyed Qatar’s ICT landscape conducted by the Ministry of Transport and Communication since 2014, revealed that households, individuals, businesses, and the government sector, are more connected than ever (Ministry of Transport and communication, 2014).

In 2015, 550 companies providing ICT products and services are estimated to be operating in Qatar. Eighty-four percent of the ICT enterprises in Qatar reported having fewer than 50 employees. The total workforce employed by ICT enterprises in Qatar is estimated to be about 22,600 employees. Fifty-eight percent of the ICT enterprises in Qatar have a presence only in Qatar, while the remaining ICT enterprises have a regional or an international presence. A majority of ICT companies in Qatar are operating in multiple areas. Approximately 70 percent of the companies surveyed are involved in IT hardware trading, 56 percent in IT software development, 55 percent in IT support services, 52 percent in IT managed services, 49 percent in IT integration services, and 38 percent in communication network development. However, the ICT manufacturing industry hardly exists in Qatar; thus, ICT products sold in Qatar are mainly imported, and there is a higher dependence on the international markets for the latest technologies (Ministry of Transport and communication, 2016).

In 2014, the total revenue generated by the ICT providers in Qatar was estimated to be close to \$2.5 billion, reflecting a compound annual growth rate (CAGR) of 15.4 percent for the period of 2012–2014. According to International Data Corporation (IDC), total ICT spending by the commercial sector in Qatar in 2015 was US\$1,932.25 million and is projected to increase to US\$2,761.07 million by 2019 (Ministry of Transport and communication, 2016).

Methodology

The methodology of this article is mainly based on literature review and semistructured interviews. After the literature review on theoretical dimensions, presented earlier, the empirical research started with a literature review on the Qatari entrepreneurship and innovation

environment and the ICT sector with written documents, governmental reports, such as the different reports and documentation published by the Qatari Ministry of transport and communications (Ministry of Transport and communication, 2014; 2016), websites, newspapers, and so on. This step gave us a general overview of the entrepreneurship ecosystem in Qatar and helped us to determine the most important stakeholders and the characteristics of the ICT sector in Qatar: dynamics, relationships between stakeholders, the role of the government, and so on.

The second step was a qualitative investigation with two rounds of interviews based on two semistructured questionnaires and was conducted during the period from October 2017 to May 2018. The first series of interviews was held with 10 experts and representatives from institutions and organizations involved in entrepreneurship and innovation in the ICT sector in Qatar such as: QDB, QSTP, Bedaya Center, the Center for Entrepreneurship in Qatar University, QBIC, ictQATAR, incubators, and so on. The interviews were conducted by phone or in person. The average length of the interviews was 1 h 10 min. The questionnaire (Questionnaire 1) covered five areas:

- (1) General information about the organization: programs and services, role in the development of the industry, role in the entrepreneurial ecosystem, and so on.
- (2) Dynamics of the entrepreneurship ecosystem: challenges, actors, evolution, and so on.
- (3) Dynamics of the local network: the network of partners, role in the network, the key leaders of the network, the level and type of relationships and interactions, barriers, challenges, limits, results, and so on.
- (4) The government policies and regulations: the relationship with governmental actors: the nature of relationships, the degree of government involvement in the development of the industry, and so on.
- (5) Challenges of the ICT sector in Qatar: strengths, weaknesses, opportunities, threats, and so on.

The second series of interviews were held with 18 ICT companies. The interviews were conducted by phone or in person. The average length of the interviews was 1 h 02 min. For our study, we focused on IT software development. The companies were randomly selected according to a representative survey design in terms of the size and the life stage of the company (Table I). The companies were selected based on different sources such as the ICT Business Directory published by the Qatari Ministry of Transport and Communications, the list of companies incubated in QBIC, and the list of companies located in QSTP. Consequently, we tried to get some diversity but also a certain representativity, although this cannot be totally ensured in a qualitative process such as ours.

The questionnaire (Questionnaire 2) for the companies covered seven areas:

- (1) The company: history, evolution, activities, and so on.
- (2) Dynamics of entrepreneurship ecosystem: challenges, actors, evolution, main obstacles of entrepreneurship in Qatar, main forms of support available for entrepreneurs, trainings and services available for entrepreneurs, and so on.

Life stage	Size (number of employees)	Number
Start-ups	–	5
Mature companies	Micro: 0–10	7
	Small: 11–50	6
	<i>Total</i>	<i>18</i>

Table I.
Distribution of the interviewed firms

- (3) Production: product development, strategic positioning, markets, and so on.
- (4) Innovation: nature, objectives, factors that influence innovation, networks, obstacles, sources of knowledge and trade partners, and so on.
- (5) Dynamics of the local network: the network of partners, role in the network, the key leaders of the network, the level and type of relationships and interactions, and so on.
- (6) The relationship with governmental actors: the degree of government involvement in the development of the sector, and so on.
- (7) Challenges of the ICT sector in Qatar: strengths, weaknesses, opportunities, threats, and so on.

Our analysis began with the processing of the data. To facilitate the processing of information collected, we transcribed the interviews. We prefer to have a full transcript of everything that was said to keep the logical arguments of each interviewee. Subsequently, we conducted a content analysis of interviews, and finally, we classified the information and elements of the interviews, using an analytical framework that incorporated the main research themes. We processed the verbatim with NVivo 10, a qualitative research analysis program. The searching facilities in NVivo can “add rigour to the analysis process by allowing the researcher to carry out quick and accurate searches of a particular type; and can add to the validity of the results by ensuring that all instances of a particular usage are found.” (Welsh, 2002l, p. 5). NVivo helped us to codify the data based on an analysis grid covering a set of themes related to our topic. This allowed us to classify statements made by each respondent based on the topic discussed (Table II). This searching was combined with manual analysis to assure that the data was thoroughly interrogated.

Characteristics of the entrepreneurship ecosystem in the ICT sector in Qatar

Two opposite forces shape technological entrepreneurship in Qatar: on one hand, the “rentier state” model and on the other hand, the determination of the Qatari government to diversify the economy. These two forces shape the entrepreneurship ecosystem in different ways.

A top-down entrepreneurship ecosystem

Qatar has placed an increasing emphasis on the importance of SMEs and entrepreneurship in the state’s overall development plans. As a result, the Qatari entrepreneurial ecosystem is largely a result of strong government intervention where the government is the main

Themes	Subthemes
Linkages between actors	Nature of the relation Local network International network
Governance	Leadership Role of associations Role of public actors Role of firms
Entrepreneurship ecosystem	Resources and support Efficiency
Innovation	Leadership Resources Relations industry/universities

Table II.
The analysis grid

leader. This leadership is driven by the desire to diversify the economy as mentioned in Qatar (2030) and in Qatar's National Development Strategy 2011–2016. Qatar 2030 recognized the importance of entrepreneurship for economic diversification that would reduce Qatar's dependence on hydrocarbon industries. Qatar's National Development Strategy 2011–2016 recognized that diversification necessitates improving the business climate and private sector development, bolstering entrepreneurship, and reforming the labor market ([General Secretariat for Development Planning \(GSDP\), 2011](#)). In fact, the majority of organizations working in the entrepreneurship field in Qatar were created by the government or/and supported by governmental funds through an interconnected and overlapping network of programs ([Enis, 2015](#)).

Some organizations are considered nongovernmental such as QF. However, direct government initiatives are difficult to disaggregate from others, as the state is present in many activities often associated with the private sphere. Many organizations labeled nonprofit and nongovernmental are in fact deeply connected to government agencies. For example, QF is considered a nongovernmental organization, but QF was founded in 1995 by His Highness Sheikh Hamad bin Khalifa Al Thani, the Father Emir, and Her Highness Sheikha Moza bint Nasser ([Enis, 2015](#)).

Qatar has made major efforts to create a vibrant entrepreneurship ecosystem with the creation of significant institutions and organizations to help entrepreneurs: incubators and funding structures, and so on, including the QDB, Enterprise Qatar, Silatech, Social Development Center, INJAZ Qatar, Center for Entrepreneurship (QU), QBIC, DIC, QSTP, and QF ([Table III](#)).

As a result, "If you look back five years ago, Qatar's entrepreneurship ecosystem was totally different from what you see today. Now, it is more supportive and entrepreneur-friendly than it was before."^[1] One respondent pointed out to this improvement:

There is a lot of change, especially in the policies and legal aspects. Not as easy as we would like, but they started to be more flexible and decrease some obstacles. As the rule of having at least 150,000 Qatari Riyals to start a company, so many companies started after this law was removed. Also, these big legal entities are supporting entrepreneurship organizations like incubation centers. The ecosystem has become more smooth and compact.

Furthermore, in 2018, according to the Global Entrepreneurship Index, Qatar was ranked first in GCC countries, second in the MENA region, and 22nd position globally ([Acs et al., 2018](#)). However, the Qatari government did not issue a clear and specific technological entrepreneurship strategy or policy. The support for the technological entrepreneurship can be found at the cross-border of the mechanisms to support entrepreneurship in general, for example, QDB, QBIC, and Bedaya offer their services for all types of entrepreneurs or the mechanisms of support for innovation and R&D, as we can see with QSTP and QF. Furthermore, technological entrepreneurs in Qatar are still facing some barriers and difficulties.

The entrepreneurship in the ICT sector: driven by opportunity

The GEM report ([2016](#)) states that there are two types of motivations for early-stage entrepreneurial activity. First, the necessity-driven early-stage entrepreneurial activity, which encompasses entrepreneurial activity driven by necessity, and there are no alternative income-generating options. Second, opportunity-driven early-stage entrepreneurial activity, which covers entrepreneurial activity driven in part or entirely by opportunity, rather than by lack of alternative employment options.

In 2017, Qatar was ranked eighth out of the 54 participating economies in [GEM 2017](#) for opportunity-driven early-stage entrepreneurs ([GEM, 2017](#)). 82.4 percent of early-stage business in Qatar is opportunity-driven, which is the highest rate across the MENA region.

Organization	Est. Date	Mission and goals
Social development Center (Nama Center)	1996	In line with the mission of the Qatar Foundation for Social Work, the Nama Center contributes to expanding the opportunities available to youth, building their capacity, and empowering them
Qatar Development Bank (QDB)	1997	Developing and empowering Qatari entrepreneurs and innovators to contribute to the diversification of the Qatari economy, through successful small and medium enterprises that are able to compete in global markets
Qatar Science and Technology Park (QSTP)	2005	Fostering an open ecosystem for innovation, research, and entrepreneurship
INJAZ Qatar	2007	Creating an SME ecosystem conducive to an innovative entrepreneurial spirit and business growth and supporting SMEs in achieving excellence of business execution
Enterprise Qatar	2008	Being the focal point of SMEs and the driver of economic diversification and entrepreneurial innovation in Qatar
Silatech	2008	Silatech is an international development organization that connects young people to economic opportunities and jobs through innovative enterprise development and employment initiatives
Digital Incubation Center (DIC)	2011	Boosting ICT innovation in Qatar, particularly among young people at the critical early stages of starting or growing a technology-related business
Bedaya Center	2011	The Bedaya Center provides Qatari youth access to a wide range of services including career guidance, employability skills development, employability and entrepreneurship, etc
Center for Entrepreneurship (QU)	2013	Supporting students and the QU community to develop business ideas and transform them into viable start-ups
Qatar Business Incubation Center (QBIC)	2013	The QBIC is a unique mixed-use business incubation center providing support services to help entrepreneurs and companies that either have an idea to start a business or want to grow an existing business

Source(s): Websites of the mentioned organizations

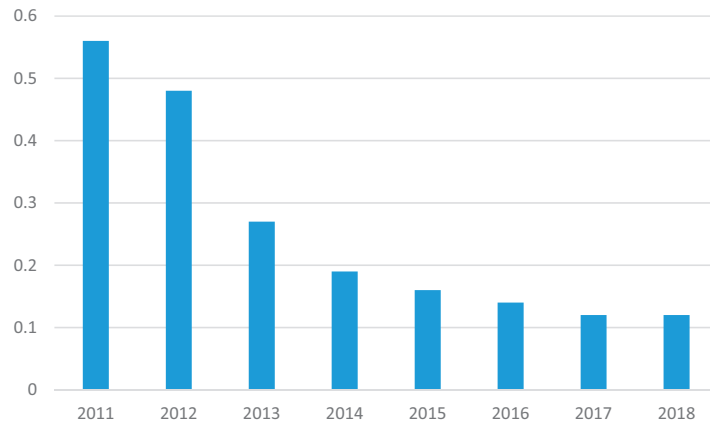
Table III.
The main entrepreneurship support organizations in Qatar

For our research, 100 percent of early-stage companies we met are opportunity-driven. This could be explained by two factors. First, unemployment rates in Qatar are among the lowest in the world within both Qataris and expatriates (Figure 1).

Second, for expatriates, residence permits are linked to employment, and very few unemployed expatriates remain in the country (GEM, 2016). Unemployment rates among Qataris are low because of the economic structure of Qatar and the relation state/citizens. In fact, the “social contract” in Qatar, such as the other GCC countries, is based on the rentier state model as explained earlier. This social contract guarantees a job in the public sector. These jobs for life provide salaries several times higher than those of private-sector ones and also convey an array of benefits, such as shorter working hours and longer holidays (Forstenlechner and Rutledge, 2010). As a result, the participation of Qataris in the private sector is low.

According to the MDPS (2017), in 2016, about 78 percent of employees worked in the private sector, whereas 10 percent worked in the public sector. Although the private sector employs most of the labor force, yet the percentage of Qataris working there did not exceed 10 percent of the total Qatari labor force in 2016, declining from 12 percent in 2015. The Qataris employed by the public sector attained 81 percent of the total Qatari labor force.

Figure 1.
Unemployment rates
in Qatar



Source(s): [https://www.theglobaleconomy.com/Qatar/Unemployment rate/](https://www.theglobaleconomy.com/Qatar/Unemployment%20rate/)
(accessed 5 February 2019)

Careers in the public sector are much more attractive, better paid, and less onerous than those in the private sector (Forstenlechner and Rutledge, 2010; Khamiri, 2015). This reduces the incentive for Qataris to become entrepreneurs, particularly full-time entrepreneurs, affecting the speed of start-ups' growth. Consequently, most of the Qatari entrepreneurs are motivated by opportunity. They keep their good jobs in the public sector, but they decide to create their entrepreneurial activity to take advantage of a business opportunity.

Barriers to entrepreneurship in the ICT sector in Qatar

According to entrepreneurs, three areas of an entrepreneurial ecosystem are of pivotal importance – accessible markets, human capital/workforce, and funding and finance.

Human capital/workforce

The first barrier to technological entrepreneurship in Qatar is human capital. In this regard, start-ups are constrained by two main factors: deficiency of human resources and the mismatch between the skills required by the industry and those provided by the education system.

First, start-ups suffer from a deficiency of human resources related to technology especially engineers. Most of the persons we met expressed concerns about shortages of qualified human resources. This is related to a general issue characterizing the education system in Qatar. In fact, engineering in particular and other relevant STEM (Science, Technology, Engineering, and Mathematics) fields in general are the most critical sciences to support the knowledge-based economy (National Academy of Engineering (NAE), 2004). To the question: What are the main difficulties in the technological sector in Qatar? An entrepreneur mentioned:

Mainly access to talent, it is hard to find the right talent in Qatar, it would be better to have freelance visas. Also, even new graduates in Qatar demand at least \$2000, so you have to pay high salaries for a little experience. In addition, the bigger companies grab the better graduates since they can offer higher salaries. (Company 4. Questionnaire 2. Interview, 2017)

In addition, it is hard for start-ups to get talent from outside the country due to the government regulations for sponsorship.

Sometimes you find the right talent but it is located elsewhere, and due to sponsorship laws, you cannot get it for your company. So, if you found a good talent in Tunisia, for example, but you do not have like a good contract with Qatar foundation, they may tell you to take an Indian talent instead. (Company 15. Questionnaire 2. Interview, 2018)

As highlighted by the last World Economic Forum report (2017), Qatar ranks 37th on the quality of its higher education system. However, Qatar ranked 73rd for the secondary education enrollment rate and 105th for the tertiary education enrollment rate. According to [Sellami et al. \(2017\)](#), only a small percentage of Qatari students are interested in a career in a STEM field, while a large percentage remain attractive to jobs in the public sector. Enrollment in science programs at Qatar University has seen a sharp decline in the last 15 years, which has resulted in the suspension of three science programs. Students are currently not entering STEM careers at a level that will lead to the economic self-sufficiency envisioned for Qatar's future ([Said, 2016](#)). Thus, "declining enrollment in science and mathematics needs to be reversed especially at the tertiary level to better fulfill the needs of knowledge-based economy industries" ([GSDP, 2012](#); p. 52).

Furthermore, there is a mismatch between the skills required by technological start-ups and those provided by the education system. One of the key challenges achieving the goals of Qatar (2030) is "Raising the achievement of Qatari students at all levels, especially in math, science and English and, through that, increasing educational attainment of Qatari students" ([GSDP, 2011](#); p. 124). Despite considerable investments, Qatar is still lagging in education performance ([Osman, 2015](#)). In the Trends in International Mathematics and Science Study (TIMSS)[2], Qatari fourth- and eighth-grade students remain significantly below the international average. Additionally, in the Program for International Student Assessment (PISA)[3], Qatari students have shown progress in science achievement, but they remain below the international average ([Said, 2016](#)). In 2012[4], in the PISA, among 65 countries, Qatar ranked among the last third in mathematics, reading, and science. The results revealed that 70 percent of Qatari students underperformed in mathematics ([Koç and Kayan Fadlelmula, 2016](#)). Third, there's an issue related to the curriculum and the skills. As mentioned in one of the interviews:

There is no concentration on developing ICT skills in the engineering education field, it is very classic with little cooperation with the industry and no programs to provide updated knowledge. Our programs are very classical. The knowledge is there in colleges and universities, but the interaction is not there.

Social values and culture

Among the many influences on the decision to start a new business (or not), social values such as the perceived status of the entrepreneur, whether entrepreneurship is seen as a good career choice, and whether the media is viewed as promoting entrepreneurship, can all be important.

The GEM report (2017) indicates a positive societal attitude toward entrepreneurship in Qatar. 77.3 percent of the Qatari adult population believe that entrepreneurs enjoy a high level of social status and respect and 65.9 percent believe that starting a new business is a good career choice. Paradoxically, in their study, [Benchiba-Savenius et al. \(2016\)](#) indicated a strong preference for the public over private sector employment in Qatar. 60 percent of Qataris surveyed would most like to work for the Government/Public Sector and 49 percent wanted to work in Defense and Security.

In fact, business ownership is regarded favorably by Qatari society but as an extra income. The most common model of an entrepreneur in Qatar is the "passive entrepreneur." The entrepreneur has a secured full-time job most of the time in the public sector and has a business to earn extra money. Quitting his job and start his own business as a full-time entrepreneur is risky. One respondent has explained this tendency as follows:

Even within the families, the priority is to have a secured job in the public sector. Having a business or being an entrepreneur is perceived as an extra activity to have an extra income. With the guarantee of secure, high-paying public sector work, there seems to be less incentive in Qataris to assume the risk and difficulty of starting a business. Saying that you want to quit all of that and become an entrepreneur, this is a huge, huge risk at our financial lifestyle. It's really hitting our lifestyle and how we're going to be perceived by the community and the family. (Company 2. Questionnaire 2. Interview, 2017)

Furthermore, the sociocultural characteristics of Qatari society affect entrepreneurship. As for the other GCC country, the Qatari culture is characterized by conformity. It is a collectivist culture based on respect for seniority and traditions. However, entrepreneurship cannot accommodate for those traits as it depends on new ideas and products continually challenging old ones and individualistic efforts to change some preexisting factors (Mehrez, 2019), as confirmed by Sheikha Al-Misnad, Qatar University Former President:

“Our culture – Qatari or Arab – is traditionally about conformity. You have to give submission to your tribe, your family, your state, so entrepreneurship – or “thinking outside the box” – is not something you would traditionally be proud of or encouraged to do. Most of your life you’ll be respected and encouraged as much as you respect the structure of your society or family. Entrepreneurship is a personal trait – education can help, but it cannot change people to be entrepreneurs if they are not that way inclined. Entrepreneurship is not such a serious concept in Qatar, where it’s perceived as a “bit on the side” and undefined” (Qatar Today, 2012)

In addition, this can be related to the perception of business risk and the fear of failure. According to the report of GEM (2016), 48.4 percent of Qatar residents believe there will be good opportunities for starting a business in Qatar. While 38.9 percent of respondents intend to start a business in the next three years, only 7.8 percent are either actively engaged in starting a new business or are currently operating one. Which is lower than the average rates both in the MENA region (10.9 percent) and in other innovation-driven economies (9 percent). In 2016, Qatar’s Total Early-Stage Entrepreneurial Activity (TEA) rate is ranked in 50th place out of the 65 participating economies. The TEA rate provides a measure on the two early phases of business ownership: the proportion of respondents who are actively engaged in starting a business (nascent entrepreneurs) and new business owners (GEM, 2016).

The results highlight the relatively low levels of entrepreneurial activity in Qatar. This indicates there is a significant drop-off between those intending to start a business and those that see it through to fruition and start one. This can be explained by the fear of failure, which might cause some potential entrepreneurs to avoid starting a business. Moreover, that is a part of the culture.

The culture here cannot understand that a start-up is a high risk since only around ten percent of start-ups are successful. People here look at this as a negative, and a waste of time and energy, when it is not. It is actually beneficial for young people to take the risk of starting a business, it teaches them a lot about business and entrepreneurship; this is not how it is seen in Qatar. When you talk to these young people, they do see this pressure from their families and society, so they face a large fear of failure since failure is never accepted in this culture. (Organization 8. Questionnaire 1. Interview, 2018)

Access to finance

Access to finance is the key constraint to many entrepreneurs in most countries around the world. As highlighted by the World Bank (2016): “Access to finance is one of the main obstacles to the growth of SMEs in GCC economies. Only an estimated 11 percent of SMEs in the GCC have access to credit, and about 40 percent of them identify lack of financial access as a major constraint. Although bank lending is the main source of financing for GCC firms of all sizes, SME lending penetration is very low, with an average of 2 percent of total loans,

compared with 13 percent in the non-GCC Middle East and North Africa (MENA), for example.” Most respondents have relied on their own funds or their families’ and friends’ resources. However, family is by far the dominant source of informal investment in Qatar. Among the many concerns of tech entrepreneurs in Qatar, identifying sources of early-stage capital is perhaps the most daunting, as highlighted by the last World Economic Forum report of competitiveness (2017) (Figure 2).

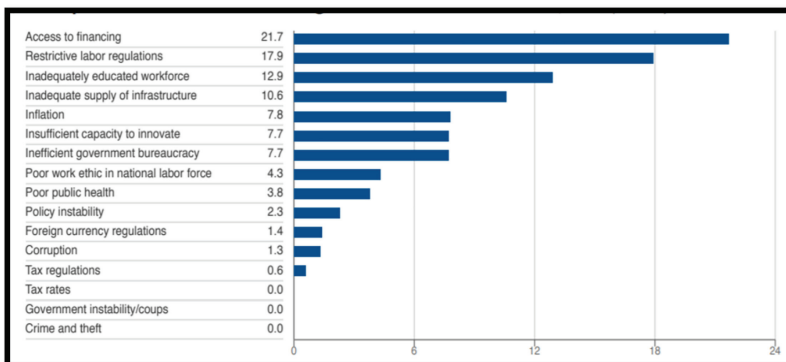
In our sample, 75 percent of the entrepreneurs stated that access to finance was the principal barrier to growth they faced. However, having limited access to financing in Qatar might sound counterintuitive when we take into account the fact that Qatar has the highest GDP in the world (Mehrez, 2019). In fact, entrepreneurs struggle to find adequate funding. Most start-ups in Qatar are financed through the family. At the same time, new entrepreneurs in Qatar face high costs. Renting, staffing, and the cost of the initial investment in materials and equipment are very high (Kebaili et al., 2015).

This issue could be explained by the culture of banks in Qatar. Most of the banks in Qatar prefer funding more secure projects such as real estate. “Debt and equity capital markets are small and limited in a way that creates an obstacle to raising funds for small- and medium-sized enterprises. At the same time, it is hard to obtain bank loans, given that 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, as explained by the senior regional economist at HSBC (Arabian Business, 2012)”[5].

As confirmed by Abdulla Zaid Al-Talib (Actual Chairman of Qatar Mobility Innovations Center (QMIC)) : “We cannot blame the financial institutions, because they have their own private models, which do not lend themselves to helping the knowledge-based economy, so this is why systems have to be in place and regulation has to be changed. There are many organizations that help startups and SMEs, but the financial institutions have to shake themselves up to be aligned with the knowledge-based economy, and there needs to be government intervention to change the policies and regulations that oversee them”[6].

Furthermore, entrepreneurial start-ups are generally not well suited to the traditional forms of debt finance since they require funding for a period during which they are not generating revenues to cover expenses (OECD, 2008)

Funding is the main problem. For a rich country like Qatar, when it comes to entrepreneurship it is so hard to find funding, mainly because people and banks do not see the short-term return on investment. (Organization 8. Questionnaire 1. Interview, 2018)



Source(s): World economic forum (2017)

Figure 2. Most problematic factors for doing business in Qatar

In Qatar, the QDB is the most important initiative undertaken by the government to reduce the SME financial access gap. QDB's main tool is a partial credit guarantee scheme. Within this scheme, QDB offers banks a guarantee on up to 80 percent of the principal of approved SME loans. In exchange for the guarantee, banks partaking in the scheme cannot charge an interest rate higher than 7 percent. Especially venture capital and angel investment are lacking. This can be related to fear. In fact, there's a fear of investing in start-ups in Qatar and the MENA region in general as explained by Khalid Abujassoum, one of the main Qatari entrepreneurs:

"There is, [fear] and I think it's natural due to the history of business in this region and how the economy has evolved. In the Gulf, the major business contributors to the economy were traders and merchants, so the whole technology entrepreneurship realm is new, and as the old saying goes, "A person is an enemy to whatever they ignore." Such fear is natural and understood"[7].

Furthermore, the rentier model favors high-return, low-risk, quick-payback investments in real estate and financial speculation at the expense of productive investments in high-value-added industries[8]. This reflects the low involvement of local entrepreneurs in the production of goods and services, contributing very little to job creation and knowledge dissemination.

Here, there are two main barriers to getting funding. The first one is the lengthy process, and the second is the mentality of the people giving out the money. Every time we found investors with some interest, they would compare us to real estate, since the investment in real estate would bring higher returns in a shorter amount of time. This is understandable since investing in start-ups is highly risky with high loss potential but also high return. (Company 10. Questionnaire 2. Interview, 2018)

To resolve this situation, in May 2018, QDB signed agreements with five international venture capital firms that would provide more than QR100mn worth of funding for Qatari SMEs. Through this service, the bank's long-term goal is to create a significantly large and diversified investment portfolio in VC funds so that it can then list the shares of yellow services as a fund of funds[9].

Conclusion and limits to the research

This paper deals with characteristics and the dynamics of the entrepreneurship ecosystem in the ICT sector in Qatar. Based on the concept of the entrepreneurship ecosystem, this paper has two objectives. Firstly, the paper aims to study the characteristics and the recent evolution of the entrepreneurship ecosystem in the ICT sector in Qatar. Secondly, the paper aims to analyze the dynamics and the different forces that shape this ecosystem. As shown earlier, two opposite forces shape the entrepreneurship ecosystem in the ICT sector in Qatar: on one hand, the rentier state model and on the other hand, the determination of the Qatari government to diversify the economy.

In fact, since 1995, Qatar has made major efforts to create a vibrant entrepreneurship ecosystem with the creation of significant institutions and organizations to help entrepreneurs: incubators and funding structures, and so on, which were confirmed by the rankings published by different international organizations. As a result, Qatar is progressing well in entrepreneurship development compared to the other GCC countries, providing better opportunities for both aspiring and full-time entrepreneurs. Besides, the blockade boosted the country's entrepreneurship drive, creating more start-ups and an array of initiatives. Consequently, the Qatari entrepreneurial ecosystem is largely a result of strong government intervention where the government is the main leader. Meantime, most of the early-stage technological companies are opportunity-driven.

However, despite this determination to diversify the economy, technological entrepreneurs in Qatar are still facing some barriers and difficulties. Our results show that those issues are tightly related to the characteristics of Qatar as a rentier state. Consequently, the findings of

our study confirm that the rentier model has stifled the spirit of entrepreneurship for numerous reasons. The first barrier to technological entrepreneurship in Qatar is human capital. In this regard, only a small percentage of Qatari students are interested in a career in a STEM field, while a large percentage remain attractive to jobs in the public sector. In the rentier state, since government employment serves as means of granting a section of the population access to the rentier capital, governments are the major employer of local labor (Gause, 1994; Shaffer, 2011).

Secondly, in terms of social values and culture, our results demonstrate that business ownership is regarded favorably by Qatari society but as an extra income. The most common model of an entrepreneur in Qatar is the “passive entrepreneur.” The entrepreneur has a secured full-time job most of the time in the public sector and has a business to earn extra money. In addition, the results highlight a significant drop-off between those intending to start a business and those that see it through to fruition and start one. This can be explained by the fear of failure, which might cause some potential entrepreneurs to avoid starting a business. In fact, the rentier model acts as an antithesis to dynamic, innovative, and risk-taking entrepreneurial activity characterizing productive economies (Beblawi, 1990). Due to the rentier mentality, it is problematic to motivate the privileged citizens to work hard (as money comes anyway). There is a break in the work–reward causation. “Reward—income or wealth—is not related to work and risk bearing, rather to chance or situation” Beblawi (1987, p. 52). Dynamic, innovative, risk-bearing, Schumpeter’s entrepreneur is the antithesis of the rentier (Beblawi, 1990). Consequently, there is a tendency for local labor to perceive rent sharing from natural resources as an inherent right, weakening incentives for effort in education as well as in the workplace.

Thirdly, access to finance is a critical challenge to many entrepreneurs in Qatar. This issue is explained by the culture of banks in Qatar. Most of the banks in Qatar prefer funding more secure projects such as real state. This issue is, also, related to the rentier model, where investments favor high return, low risk, quick payback in real estate and financial speculation at the expense of productive investments in high-value-added industries[10].

Meanwhile, the strong implication and determination of the Qatari government to diversify the economy, to boost innovation and R&D, and to create a vibrant entrepreneurship ecosystem confirm, as highlighted by Gray (2011), that the RST was not adapted enough to explain the dramatic changes in the political economies of the Gulf in the past two decades. As per the RST, the state has a limited role in supporting nonrent sectors. States also had limited interest in diversifying their economies. “The state, being independent of the strength of the domestic economy, does not need to formulate anything deserving the appellation of economic policy: all it needs is an expenditure policy.” (Luciani, 1990; p. 76). However, under the combined effects of globalization, new technologies, freer trade and investments, social changes, and development imperatives, economic diversification has become the masterpiece of the economic strategies agenda in the Gulf countries since the 1990s (Hvidt, 2013). Gray (2011) argued that a new phase of RST – “late rentierism” – should be applied to the GCC countries. (For more details about the “late rentierism” theory, see Davidson (2008), Hertog (2010), Gray (2011); and Hvidt (2011)).

Finally, we recommend the development of an effective ICT strategy to reform the sector, to boost the creation of new start-ups, and to strengthen the existing ones by focusing mainly on easing the access to finance. We recommend also to reform the legal and regulatory framework to make it more startup “friendly,” to encourage more foreigners to be entrepreneurs, and to ease the regulations for sponsorship. Since only a small percentage of Qatari students are interested in a career in a STEM field, we recommend the development of a specific strategy to attract more students to those fields. In addition, to mitigate the mismatch between the skills required by the industry and those provided by the education system, we recommend more cooperation between the private sector and the high education institutions. Also, the Qatari Government needs to develop its education system by

introducing courses and degrees related to entrepreneurship. Such initiative would have a positive impact in promoting a culture of entrepreneurship and would also lead to an improvement in management quality of SMEs (MERatings, 2019).

We need to mention a few limits of this research. Among the interesting dimensions of the entrepreneurship ecosystem in Qatar that would require more attention is the role played by entrepreneurship education to limit the effects of the rentier state model and how to change the social values, culture, and mentality. Finally, it would be interesting to compare the situation of entrepreneurship ecosystem in Qatar more systematically with that of other GCC countries, something that we hope to be able to do in future work.

Notes

1. QDB executive director of Advisory Services and Incubation Ibrahim al-Mannai told Gulf Times in an interview (<http://www.gulf-times.com/story/595191/Qatar-remains-conducive-to-new-businesses-despite>) (accessed June 5, 2018).
2. TIMSS is a large-scale assessment designed to inform educational policy and practice by providing an international perspective on teaching and learning in mathematics and science. (<https://timssandpirls.bc.edu>) (accessed February 28, 2018).
3. PISA is a triennial international survey that aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students. (<http://www.oecd.org/pisa>) (accessed February 28, 2018).
4. Until now, Qatar has participated at TIMSS in 2007, 2011, and 2015 and at PISA in 2006, 2009, 2012, and 2015 (Koç and Kayan Fadllemula, 2016).
5. <https://www.arabianbusiness.com/gcc-private-sector-boom-still-vulnerable-480365.html> (accessed 27 September 2018).
6. <http://qatartoday.online/> (accessed 3 September 2018).
7. <https://www.entrepreneur.com/article/247070> (accessed 3 September 2018).
8. <http://carnegie-mec.org/2012/04/03/rentier-economy-fueling-unemployment-and-poor-job-quality-in-arab-world-pub-47703> (accessed 3 September 2018).
9. <https://www.gulf-times.com/story/591165/QDB-signs-deal-with-5-global-VC-firms-for-QR100mn> (accessed 3 September 2018).
10. <http://carnegie-mec.org/2012/04/03/rentier-economy-fueling-unemployment-and-poor-job-quality-in-arab-world-pub-47703> (accessed 3 September 2018).

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