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# Entrepreneurial universities and integrated sustainability for the knowledge-based economy: self-perception and some structural challenges in the Gulf region

Esmat Zaidan<sup>1</sup>  , Rula Momani<sup>2</sup> & Mohammad Al-Saidi<sup>3</sup>

Innovation and the promotion of entrepreneurship are requirements of the transition towards knowledge-based economies. Universities are assigned a key role in advancing entrepreneurship through the restructuring of teaching, research, and governance with an emphasis on innovation and sustainability. In the Gulf region, universities are increasingly adopting reforms aimed at redefining their missions towards entrepreneurial education. This study examines the impact of university-based innovation and entrepreneurial models on progressing towards knowledge-based economies, with Qatar University serving as a case study. It qualitatively assesses recent university reforms and contextualizes these reforms within limitations in the national context and the political economy of the rentier states in the Gulf. The findings suggest that for Gulf region universities to effectively become entrepreneurial and support sustainable development, they must cultivate an entrepreneurial culture and mindset. This requires structural and cultural shifts that resonate with national context, institutional values, and the global sustainability goals. The study indicates that a top-down approach to developing entrepreneurial universities is less effective. It advocates for policies and incentives that motivate universities to become entrepreneurial. Ultimately, the study's insights aim to guide policymaking to develop knowledge economy frameworks in Qatar towards a sustainable future.

<sup>1</sup> College of Public Policy, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar. <sup>2</sup> Gulf Studies Center, College of Arts and Sciences, Qatar University, Doha, Qatar. <sup>3</sup> Center for Sustainable Development, College of Arts and Sciences, Qatar University, Doha, Qatar. email: [ezaidan@hbku.edu.qa](mailto:ezaidan@hbku.edu.qa)

## Introduction

In recent years, higher education (HE) has undergone significant changes due to globalization and the increasing demands of the knowledge-based economy (KBE) (Sam and Van Der Sidji, 2014). Largely influenced by the Anglo-American model, HE in the Arabian Gulf is characterized by the evolving roles of universities, which now have traditional missions of teaching and research, as well as a third mission of economic development (Al-Thani et al., 2021; Sam and Van Der Sijde, 2014). Although there may be different perspectives on this new goal, universities in the Gulf region are expected to adopt the concept of an entrepreneurial university, which emphasizes partnerships between universities and external stakeholders (Al-Maadeed, 2019). This means that they are now placing more emphasis on making a positive social and economic impact (Al-Kuwari et al., 2021). This is in line with the decades-old trend of higher-education institutions (HEIs) adopting economic objectives and entrepreneurial approaches, patenting, and licensing technologies to commercial entities (Fisher and Atkinson-Grosjean, 2002). Alongside the preservation, production, and transmission of knowledge, HEIs are engaged in the promotion of economic growth and development to promote societal welfare (Al-Thani, et al., 2021). In the Gulf region, this means that HEIs are increasingly seen as knowledge-production hubs and as partners for industries with the goal of maintaining competitiveness (Al-Qahtani et al., 2022).

The new expectations placed on HEIs stem largely from the concept of KBE as a holistic and sophisticated approach to bringing together researchers and entrepreneurs. KBE emphasizes the role of education–industry collaboration and the requirement for universities to finance parts of their operations through connections to entrepreneurial networks (Abulibdeh et al., 2024), with the final aim of co-creating innovation outputs (Tadros, 2015; Khorsheed, 2015). Countries of the Gulf Cooperation Council (GCC) are increasingly adopting these concepts of KBE and entrepreneurial HEIs. In the case of Qatar, overarching development strategies such as Qatar National Vision 2030 (QNV 2030) have adopted these concepts and facilitated large-scale investments in state-of-the-art education facilities and innovation infrastructure in order to develop human capital in all sectors capable of innovation and entrepreneurship.

What is yet to be seen is whether the national population is up to the challenge: i.e., if they will earn the description of “knowledge workers” (Drucker, 2007). Hydrocarbon-dependent rentier states, such as Qatar, rely heavily on their natural resources, particularly oil and gas, as their primary source of revenue and economic growth. However, with the increasing global demand for sustainable energy and the decrease in the price of oil, these states have been facing challenges in maintaining their economic stability (Al-Kuwari et al., 2021; Al-Qahtani et al., 2022). To address this issue, many hydrocarbon-dependent rentier states have been shifting towards KBE as a way to diversify their economies and reduce their dependence on hydrocarbons. KBE is also seen in the Gulf as means of leapfrogging development into the modern (capitalist) age, relying on knowledge and innovation through highly qualified human capital. Utilizing their carbon reserves, GCC states borrowed and imitated technologies and planning ideas rather than generating inventions or innovations of their own (Zaidan, 2019; Zaidan and Abulibdeh, 2020). Alongside the classic forms of capital – natural, produced (or built), and financial – human capital, generally defined as investments in education, health, job training and migration, is an important form of capital that is particularly dependent on the fifth form, namely social capital, which is understood as the institutions and social norms supporting human capital (Laroche et al., 1999; Clarke and Gholamshahi, 2018). This

interdependence between human and social capital is highly relevant for the relatively young states of the Gulf region.

Countries such as Qatar have included KBE in their development visions, e.g., the economic pillar of QNV 2030 describing economic diversification as maintaining competitiveness through a “knowledge-based economy characterized by innovation, entrepreneurship, [and] excellence in education” (Komalasari, 2016). However, the rapid economic growth did not provide the human capital with sufficient time or experience to effectively catch up. As a result, this transformation has been more like a race than a natural evolution. Despite modern education and incentives to create a motivated workforce – particularly by increased private-sector participation – structural limitations to such participation are still persistent. They include the small population size, the nature of the rentier state, and the lack of enthusiasm for entrepreneurship and the private sector (Elessawy and Zaidan, 2014; Zaidan et al., 2019; Hvidt, 2015). The consequences of the promotion of KBE are also unknown. A highly educated and skilled workforce can create agents of change, challenging their top-down-led regimes due to, for example, perceived limitations to their freedom to access and utilize knowledge (Kamrava et al., 2011). In this context, two questions need to be kept in mind while reading this paper: First, is a knowledge-based economy compatible with the political economy and the redistributive public-sector policies in rentier states? and second, can (and how can) entrepreneurial national universities, in the specific context of the Gulf region, overcome structural limitations in order to implement KBE-related expectations?

As will be shown in this paper, the shift towards KBE and entrepreneurial universities is a complex and long-term process, and there are several challenges that must be addressed, such as the need to invest in and develop the necessary infrastructure and resources and to guide the existing mindset and culture towards entrepreneurship and innovation. The specific context of the Gulf region in terms of finance, political economy, and development legacies illustrates how entrepreneurship challenges relate to the contextual ecosystem of universities. This paper seeks to understand the role of education in leading the transition in the Gulf towards the knowledge economy and creating entrepreneurial ecosystems, specifically in Qatar. It aims to analyse the role of innovation-entrepreneurial models in the transition of higher education towards KBE, using Qatar University (QU) as the subject of a case study. Using reported perceptions of HE administrators and the pertinent academic literature, the paper presents and critically evaluates the entrepreneurial university model in QU, as the national university and by far largest in Qatar. This paper thus contributes to academic debates seeking to understand variations and nuances of entrepreneurship models in HEIs. It also highlights the relevance of contextualizing entrepreneurship reforms at universities using broader frameworks that include political economy, culture, individual agency, and external (neoliberal) expectations.

## Conceptual background

**KBE, innovation, and entrepreneurship: linkages and relevance.** The concept of KBE provides a new economic processing system involving production, consumption, marketing, and distribution based on knowledge, information, and technology (Othman et al., 2021). The simplest definition of KBE, offered by Drucker (2007), rests on the difference between manual work – using hands to produce goods or services – and knowledge-based work – using the mind to produce ideas, knowledge, and information. KBE has also become a political buzzword with no unique definition covering its use by governments and

international organizations to emphasize the relevance of knowledge and innovation as the main drivers of job creation and economic growth (Tadros, 2015), and the dependence of modern economies on knowledge, innovation, and highly skilled workforces (OECD, 1996).

Entrepreneurship plays a key role in achieving a KBE (Al-Qahtani et al., 2022). A knowledge economy is one in which the generation, distribution, and use of knowledge are the primary drivers of economic growth and development. In this type of economy, entrepreneurs are key players in creating new products, services, and business models that drive innovation and productivity (Ratten et al., 2016). One of the most important ways in which entrepreneurship contributes to KBE is by driving innovation. Entrepreneurs are often at the forefront of new ideas and technological advancements, and they are willing to take risks to bring these ideas to market (Sopjani, 2019). This can lead to the development of new products and services that improve the lives of consumers and create new opportunities for economic growth (Antony et al., 2017). For example, the development of the Internet and the rise of e-commerce have been driven largely by entrepreneurial efforts. Startups and small businesses are often the engines of job creation in a KBE, as they are nimbler and more adaptable than larger, established firms (Acs and Audretsch, 2010). These businesses are also more likely to create new jobs as they are more likely to be expanding and growing. Entrepreneurship can also lead to the development of whole new industries, as entrepreneurs are often the first to identify new market opportunities and create new business models (Audretsch, 2006). Moreover, entrepreneurship is also important for promoting competition and fostering a dynamic economy. Small businesses and startups often compete with larger, more established firms, which can lead to more efficient and effective use of resources and more innovative products and services. This competition can also lead to lower prices for consumers and greater economic growth (Galindo and Méndez-Picazo, 2013). In addition, social entrepreneurship can lead to the development of innovative solutions to some of the world's most pressing social and environmental problems, such as poverty, climate change, and inequality (Ratten et al., 2016).

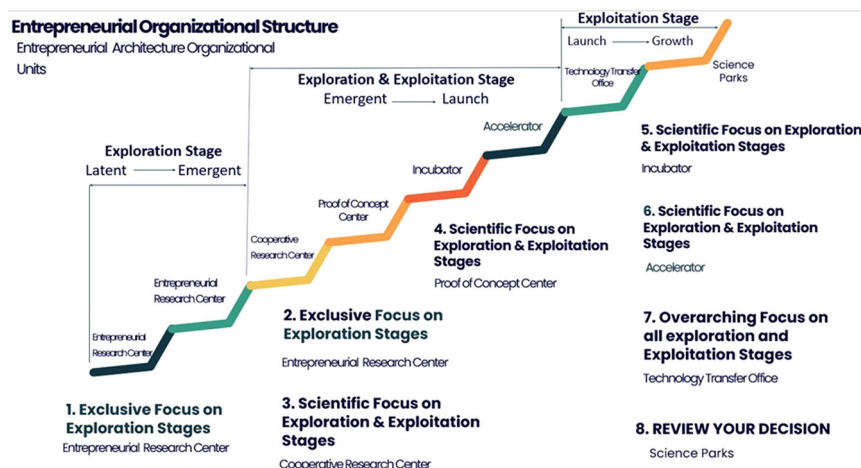
To fulfill the premises of KBE through entrepreneurship and innovation, several expectations are placed on the public sector and on the main knowledge producers, namely HEIs. Governments can support small innovative businesses – for example, through tax breaks, access to capital, and training programs – while also promoting R&D – for example, through additional funding for entrepreneurial activities of HEIs (Sopjani, 2019). With this support, the entrepreneurial ecosystem is enhanced, leading to the production of a more attractive environment for entrepreneurs (Antony et al., 2017). However, with the rise of concepts such as KBE, expectations from HEIs have grown with regard to their contributions to regional innovation and economic growth, while the HEIs are often unable to fulfill these expectations, or they exhibit unfavorable local conditions for implementing KBE (Kempton, 2019). HEIs react differently to the fact that their environments are exhibiting more uncertainty and complexity, seek to situate themselves within these environments and aim to meet – sometimes unsuccessfully – some of the external expectations (Gibb et al., 2013). With the further restructuring of economies – for example, towards more high-tech production – and the expectations from HEIs to respond to these “neoliberal” economic models, serious social consequences can emerge, such as a growing divide between (increasingly exploited) employees and administrators (Kezar et al., 2019).

**Entrepreneurial universities: role and understandings.** Universities are seen as human capital centers tasked with the

development and advancement of knowledge, technology, and growth (Laroche et al., 1999). The transition towards the KBE requires a refocus on education and R&D activities towards innovations that facilitate entrepreneurial activities (Sopjani, 2019). The traditional educational role of universities is seen within human capital theories as crucial for economic growth through increasing human capital in the labor force, and hence labor productivity, enhancing innovative capacity, and facilitating the transmission and diffusion of knowledge (Hanushek and Woessmann, 2020). It can also increase knowledge capital as the “aggregate cognitive skills of a country,” although the increase in such knowledge capital might not effectively influence growth if there is no productive frameworks in terms of high-quality institutions and education (Hanushek and Woessmann, 2020). Following this conception, this paper contributes to the academic literature on entrepreneurial universities by analyzing cases from the Gulf region in terms of university-based reforms aimed at entrepreneurship as well as quality-related aspects such as implementation challenges or institutional contexts.

Illustrating the case of the transformation of QU into an entrepreneurial university will enrich the academic literature dealing with entrepreneurial university ecosystems that have emerged over the last 20 years from studies of entrepreneurial university models in the US and the UK (Fuster et al., 2019). Studies of entrepreneurial universities mainly deal with analyzing the differences in the local contexts of the entrepreneurial university ecosystems – a knowledge system centered around entrepreneurial universities – during the shift of universities away from knowledge dissemination towards innovation, commercialization, and entrepreneurship (the key premises of KBE) (Fuster et al., 2019). In general, entrepreneurial universities are understood as those that adopt organizational and governance changes in order to adapt to their environments and, ultimately, to develop an entrepreneurial culture at all levels that can stimulate economic development and the commercialization of research (Guerrero et al., 2015). Mainstream academic research on entrepreneurial universities largely deals with evaluating outcomes and activities within the entrepreneurial university ecosystems such as university–industry cooperation (Abulibdeh et al., 2024), third-party funding, incubators, knowledge management systems and transfer, entrepreneurial leadership, or new university strategies for research and teaching (Secundo et al., 2019; Ndou, 2021; Gibb et al., 2013). Critical studies often stress the unrealistic expectations arising from concepts such as entrepreneurial universities and the heterogeneity of local implementation experiences (Kempton, 2019; Gibb et al., 2013; Audretsch et al., 2020), as well as the unintended consequences of academic capitalism and neoliberal university-based reforms (Jessop, 2017).

The transition towards entrepreneurial universities goes through different stages and classic interventions as regards the supporting institutions. Cunningham et al. (2022) discuss four distinct stages of entrepreneurship within entrepreneurial universities (Fig. 1). The first stage is “latent entrepreneurship,” characterized by the presence of entrepreneurial potential and opportunities that have yet to be recognized or acted upon. This stage involves individuals who express a desire to become entrepreneurs. The second stage, “emergent entrepreneurship,” signifies the transition from latent potential to active pursuit of entrepreneurial opportunities. Aspiring entrepreneurs in this phase engage in various activities, including market research and business planning. The third stage is the “launch phase,” in which entrepreneurs combine resources and form teams to establish new ventures. This phase involves dealing with initial challenges, including securing funding and navigating the market. The final stage, “growth entrepreneurship,” is when the venture has



**Fig. 1** Organizational architecture framework for entrepreneurial universities (redesigned largely based on Cunningham et al. 2022).

established its viability and market presence. Entrepreneurs in this stage focus on exploiting existing opportunities and may identify new ones as they grow. Universities can support this transition through different organizational units that promote the development of entrepreneurs (Fig. 1).

While this paper is anchored in the literature on the transformation towards entrepreneurial universities, it also links the case of Qatar to existing literature on the region embedding such a transformation within the development context, namely the pursuit of KBE. In the Gulf region, universities are seen to have a crucial role in this transition process by providing the necessary skills and knowledge for individuals to start and grow their own businesses (Ratten, 2016). The university entrepreneurial ecosystem is embedded within the larger entrepreneurial ecosystem in the country. It should provide access to resources (e.g., through incubators, or accelerators), seek co-funding from industry, and reflect entrepreneurship in the educational and research offerings of the university. However, one needs to contextualize the efforts of the universities within the challenges faced by key actors in the entrepreneurial system in Qatar. As this paper will show, such contextualization can enrich debates on the limits and potential contribution of the KBE.

### Case study

**Qatar's drive towards KBE: performance and political economy challenges.** Qatar has explicitly referred to the vision of KBE as a guiding paradigm for its development strategies: i.e., QNV 2030 and the first (2011–2016) and second (2018–2022) Qatar National Development Strategies (GSDP, 2011; GSDP, 2018; GSDP, 2008). Often, this political will is mentioned as a strength of KBE efforts, alongside the high quality of ICT infrastructure; for example, for fixed broadband, Qatar was ranked 40th of 175 countries (Worldwide Internet Speed test, 2020). However, Qatar's shortcomings are mostly related to its human capital (Elessawy and Zaidan, 2014): i.e., its lack of qualified human resources, poor education levels, nationals' avoidance of STEM fields, and the high dropout rate among boys (Al-Kuwari et al., 2021). Qatari nationals' numbers are very small in comparison to those in the expat community, and graduates tend to choose public sector jobs for which there is little competition or need for highly qualified and tech-savvy employees. These jobs are highly paid and financed through the rents from selling the abundant carbon fuels – particularly gas in Qatar. Another related issue is the fear of failure and the search for safe positions and businesses. Starting a business is risky, and the culture in the Gulf views taking risks and failing in business negatively (Tok et al. 2021). Another limitation is the strong government

involvement in the economy. Tok et al. (2021) studied the entrepreneurship efforts in Qatar, and identified significant investments in infrastructure, education, and policymaking aimed at promoting entrepreneurship (e.g., funding for startups, monitoring, capacity building, etc.). However, beyond governmental programs, there is limited access to finance in order to create a strong entrepreneurial culture, as well as a lack of a transparent legal framework (Tok et al., 2021).

As a result of these political economy limitations and its underdeveloped human capital, Qatar's current performance on the Global Innovation Index (GII) and in knowledge and innovation production is lower than that of other high-income countries. As highlighted in the 2021 GII report, Qatar ranks below the high-income group average on all seven GII pillars, including human capital and research, institutions, and knowledge and technology outputs. In addition, Qatar's performance in the education sub-pillar of the human capital and research pillar is particularly poor, with a score of 40.1 and a ranking of 94 among the 132 economies featured in the report (WIPO, 2021b). Regionally, Qatar's overall ranking of 68 (out of 132 countries) was below Saudi Arabia (66) and the UAE (33), which may be partly related to the above-mentioned limitations of a comparatively smaller national population and a younger development legacy.

Expenditure on education has also been identified as a concerning indicator for Qatar, while school life expectancy and the Program for International Student Assessment (PISA) scales on reading, math, and science have been pinpointed as indicators of grave concern for Qatar among the rankings of high-income countries in the 2021 GII report. A summary of these overall strengths and weaknesses is presented in Table 1. According to Ganguli (2022), the performance of Qatar, and all GCC countries for that matter, on the Global Innovation Index is lower than that of countries with comparable incomes. Among the 51 high-income economies featured in the 2021 GII report, Qatar is ranked 45th, while the United Arab Emirates holds the highest position (32nd) of the Gulf states (WIPO, 2021a). Qatar also lags in the crucial metric of knowledge and innovation production, with an inconsistency between its innovation inputs (64th out of 132 nations) and innovation outputs (70 points out of 132) (WIPO, 2021b). This is problematic, as it essentially means that Qatar generates fewer innovation inputs than its level of investment requires.

**Innovation and entrepreneurship reforms.** Innovation and entrepreneurship efforts have lately increased outside of the oil and gas industry (Tok et al., 2021; Al-Kuwari et al., 2021). Already, in the first decade of this century, Qatar has shown

**Table 1 Strengths and weaknesses of Qatar.**

Strength			Weakness		
Code	Sub-pillar/Indicator Name	Rank	Code	Sub-pillar/Indicator Name	Rank
2.2.3	Tertiary inbound mobility, %	1	2.1.1	Expenditure on education, % GDP	105
3.2	General infrastructure	2	2.3.3	Global corporate R&D investors, top 3, mn US\$	41
3.2.1	Electricity output, GWh/million population	6	4.1.1	Ease of getting credit	101
3.2.2	Logistics performance	29	4.2	Investment	128
4.1.2	Domestic credit to private sector, % GDP	24	4.2.1	Ease of protecting minority investors	124
4.2.2	Market capitalization, % GDP	17	4.2.4	Venture capital recipients, deals/bn PPP\$ GDP	89
5.2.1	University-industry R&D collaboration	14	5.1	Knowledge workers	118
5.3.3	ICT services imports, % total trade	9	5.2.3	GERD financed by abroad, % GDP	93
6.2.2	New businesses/th. pop. 15-64	26	5.3.1	Intellectual property payments, % total trade	102
7.1.2	Global brand value, top 5000, % GDP	20	5.3.4	FDI net inflows, % GDP	123
7.2.2	National feature films/mn pop. 15-69	4	6.2.1	Labor productivity growth, %	109
			7.1.1	Trademarks by origin/bn PPP\$ GDP	121

Data is sourced from WIPO (2021b).

**Table 2 Research institutions and HEIs in Qatar.**

Institution	Year of establishment
Qatar University	1976
Virginia Commonwealth University in Qatar - Education City	1997
Weill Cornell Medical College in Qatar - Education City	2001
College of North Atlantic Qatar	2002
Texas A&M University in Qatar - Education City	2003
Carnegie Mellon University in Qatar - Education City	2004
Georgetown University in Qatar - Education City	2005
Qatar Faculty of Islamic Studies in Education City	2007
Northwestern University in Qatar - Education City	2007
University of Calgary Qatar	2007
Stenden University Qatar	2009
Community College of Qatar	2010
Hamad Bin Khalifa University - Education City	2010
HEC Paris - Education City	2011
Doha Institute for Graduate Studies	2014
Oryx Universal College	2018
Qatar Finance and Business Academy - Northumbria University	2018
Lusail University	2020
City University College (CUC), Ulster University	2020
University of Doha for Science and Technology	2022
Qatar Environment and Energy Research Institute (QEERI)	2010
Sidra Medical and Research Center	2011
Qatar National Research Fund (QNRF)	2006
Qatar Research and Development Council (QRDC)	2019
EARTHNA	2009

interest in promoting entrepreneurship and supporting small and medium-sized businesses (SMEs) as a part of the KBE that anchored on QNV 2030, adopted in 2008 (Ennis, 2015; Min-iaoui and Schilirò, 2017). One of the main incentives for innovation and entrepreneurship in Qatar is the availability of funding used to create new support instruments or expand existing ones (Abdellatif et al., 2022). Education City (EC), launched in 1997 as part of the governmental and non-profit Qatar Foundation for the Promotion of Education, Science and Culture, has continuously increased the number of hosted foreign universities, and created national institutions, for example, Hamad bin Khalifa University or other national research institutes under EC (see Table 2). A good example from within EC is Qatar Science and Technology Park (QSTP), which is a dedicated facility for technology-based startups, providing office space, laboratory facilities, and other resources.

Qatar has also implemented a number of policies and regulations to support innovation and entrepreneurship. For example, the Qatar Development Bank (QDB) has established a “one-stop shop” for small and medium-sized enterprises (SMEs) and startups, providing a streamlined process for accessing funding and support (Qatar Development Bank, 2021). In addition, the government has established a legal framework for intellectual property rights, including patents, trademarks, and copyrights (Qatar Development Bank, 2021). While these efforts are not yet completed, Qatar has shown a strong interest in learning from the KBE transitions of other countries in developing broad innovation strategy; e.g., the Agenda on Innovative Malaysia (AIM) (Ministry of Higher Education, 2011a; Aziz and Abdullah; 2014). American entrepreneurship centers in top-tier American universities, such as the Deshpande Center for Technological Innovation at MIT, which focuses on uncovering and developing ideas with potential commercial

application by firms, represented further inspiration for the Qatari efforts (Sidhu et al., 2014).

Qatar's higher-education system in general increased efforts to focus on entrepreneurship and innovation. It was encouraged to establish incubators and accelerators to support student and faculty startups (Qatar Development Bank, 2021; Villegas-Mateos, 2022). These incubators provide students with the resources and support they need to turn their ideas into viable businesses, including mentoring, training, and access to funding. For example, QU has established the Qatar Business Incubation Center (QBIC), which is a business incubator for startups (Al-Maadeed, 2019). QBIC provides students with the resources and support they need to turn their ideas into viable businesses, including mentoring, training, and access to funding. As this paper will show, QU, as a major part of the entrepreneurship and innovation ecosystem in Qatar, has established dedicated entrepreneurship programs, and entrepreneurship centers as well as programs on key innovation areas identified in national strategies, for example, on renewable energies or other sustainability areas.

Despite these efforts in Qatar, the already-mentioned limitations to KBE efforts in Qatar, such as the lack of entrepreneurial culture or motivated local workforces on a large scale, have resulted in modest outcomes (Al-Qahtani and Shirazi, 2023). At the same time, the prospects for innovation and entrepreneurship in Qatar are improving (Qatar Development Bank, 2021; Villegas-Mateos, 2022). The government's efforts to promote innovation and entrepreneurship, combined with the availability of funding and resources, provide a strong foundation for the development of a vibrant startup ecosystem. Furthermore, the country's strategic location and strong economy provide opportunities for international collaboration and expansion (Al-Maadeed, 2019; Zaidan et al., 2023). Overall, there is clear evidence of increased public engagement in Qatar regarding the promotion of innovation and entrepreneurship in recent years (Casanova et al., 2018), with the goal of diversifying its economy and reducing its dependence on oil and gas.

**Qatar University: role and recent transformations.** Qatar University is the oldest and by far the largest university in Qatar, with a rich history dating back to its founding in 1977. The university has undergone significant expansion in recent years, adding new programs and reaching an enrolment of over 21,000 students in 2022 (of whom over 70% are female). Thousands of students graduate every year, and they are often employed in secure governmental jobs. The university's 10 colleges offer 94 programs, including undergraduate and graduate degrees as well as diplomas and PhDs in various fields (Qatar University on U.S. News and World Report, 2022). The university also boasts a diverse student population with a large number of foreign students and academic staff. A large majority of the academic staff are international.

QU is a central actor within the innovation and entrepreneurial system in Qatar and has increasingly incorporated expectations with regard to its mandate towards economic development through innovation, entrepreneurship, and cooperation with the industry. In 2019, it was named as the main implementing partner for the National Research Strategy, which is a national initiative to build research capabilities in Qatar (Qatar Development Bank, 2021). This initiative aims to enhance the quality of research in the country and to promote collaboration among researchers, industry, and government. QU is also named as one of the main implementing partners of Qatar's formal development strategies. To correspond to this additional self-understanding in terms of its contribution to economic

development through KBE, QU has recently worked on comprehensive formal strategies to define its roles and targets.

The most recent strategy is the known as the Transformational University-wide Strategic Plan (Fig. 2), and it focuses on key areas such as teaching and learning, student experience, research and knowledge advancement, and institutional excellence and engagement (Qatar University Strategy, 2018–2023). In addition, the plan places emphasis on emerging areas such as innovation and entrepreneurship and digital transformation. The goal of the university is to become a leading source of knowledge and expertise, not only for its own community but also for other local and regional institutions. Entrepreneurship and innovation strategies, as part of its transformational strategy, contribute to the achievement of the following goals: higher education transformation to foster and develop an innovative and entrepreneurial mindset within Qatar University and beyond; educational excellence through the cultivation of entrepreneurial skills among the students, the faculty, and the wider Qatari community; and excellence in engagement to enhance Qatar's entrepreneurship and innovation ecosystem through partnerships with government, industry, and funding organizations.

Some of the key instruments for achieving entrepreneurship and innovation through this plan include strengthening collaboration with government, industry, and funding entities. For example, QU has implemented a system of advisory boards, composed of representatives from the job market, in its colleges. This system aims to ensure that students' learning experiences are closely aligned with real-world job market needs and that academic programs are up to date with the latest industry knowledge and skills. As this paper will show, increased industrial cooperation and involvement of non-academic actors in guiding educational development at QU has led to significant implications regarding self-perception of the role of the university as well as the expectations of its graduates.

## Methodology

**Justification and research focus.** The purpose of the study is to gain insight into current practices and perceptions as regards entrepreneurial universities in Qatar. The case of Qatar is particularly interesting for several reasons, such as the dominance and relevance of Qatar University with the HE system, the political economy of hydrocarbon-dependent rentier state witnessing rapid change through its relatively young history as a modern state, and the lack of literature from Qatar on entrepreneurial universities. For example, Syed et al. (2023) published a systematic review of entrepreneurial developments in universities in the Gulf region, with the bulk of academic research being on cases from the UAE and Saudi Arabia. In this paper's literature review, the great majority of studies from the Gulf are rather about students' entrepreneurial attitudes and intentions, with only a few studies on the transformation, outcomes, and challenges of the university entrepreneurial ecosystem itself. Other studies focus on standalone activities such as entrepreneurship curricula (Jabeen et al., 2017; Yarahmadi, 2019; Azim and Hariri, 2018), university incubators (Dahms and Kingkaew, 2016), or academic–industrial collaboration (Audretsch et al., 2013).

The main focus of this paper is on the interactions between activities within the university entrepreneurial ecosystem and the university context. Studying the external context is an emerging theme within the entrepreneurial university literature, where context is understood as institutional, social or industrial-related characteristics influenced by the local area of the university (Fuster et al., 2019). Kempton (2019) stresses the importance of not treating universities as homogenous actors, and the consideration of local contexts in studying the contributions of

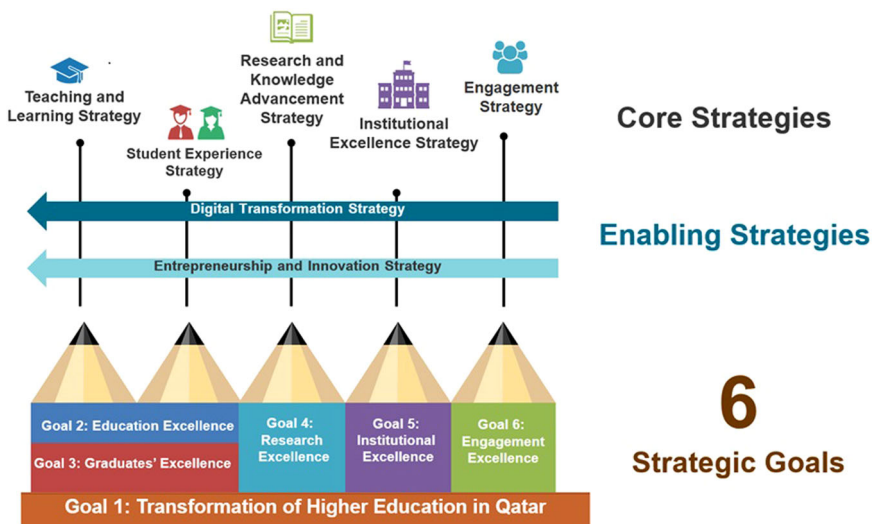


Fig. 2 Qatar University Transformational Strategy (from GSDP (2018)).

universities to regional innovation policies. Similarly, Gibb et al. (2013) argue that the concept of entrepreneurial universities has been reconfigured and re-adapted differently by universities depending on the cultural and international policy context. In studying the case of the transformation of QU as an entrepreneurial university, we apply the framework used by Guerrero et al. (2015) for understanding entrepreneurial universities. Accordingly, these universities fulfill three missions, all of which should ultimately contribute to economic development: (1) teaching activities for creating human capital in general, (2) research activities for creating knowledge capital as a source of competitive advantage, and (3) entrepreneurship activities that create entrepreneurial capital as the capacity to engage with entrepreneurship (Guerrero et al., 2015). The analysis of QU’s entrepreneurial activities reflects these three aspects, and later contextualizes them within selected literature on entrepreneurial universities from the Gulf area and the transition towards KBE within the Gulf region’s own political economic context.

**Data collection and analysis.** The methodology comprises two stages. First, for the main results (“Entrepreneurship promotion and generation” and “Self-reorientation towards an entrepreneurial university”), qualitative data were gathered through semi-structured interviews with key experts in education, innovation, and entrepreneurship at QU. The interviewees were from the fields of research, entrepreneurial education, graduate studies, and higher administration at QU. They included the administrators mainly responsible for implementing the entrepreneurship strategies of QU (i.e., the leadership of the five QU institutions tasked with promoting entrepreneurship culture and institutionalizing activities at QU). These key informants are from the Directorship of the Center for Entrepreneurship and Organizational Excellence (CEOE), the Directorship of the Office of Strategic Innovation, Entrepreneurship and Economic Development (SIEED), the Deanship at the College of Engineering, the Deanship of the College of Business and Economics, and the Deanship of Graduate Learning Support. In reporting some insights from these interviews in “Results: Qatar University’s path as an entrepreneurial university”, each interviewer was anonymized, and other data used (e.g., from policy documents, observations, and academic literature) to contextualize the provided insights. As a result, in “Results: Qatar University’s path as an entrepreneurial university”, only insights or information

directly stemming from the interviewees are referenced to the interviews (i.e., Interview 1, 2, etc.).

The interviews were conducted between May and June 2022 using a semi-structured format, allowing for some flexibility in the conversation while still maintaining a consistent set of questions. Interviewees were first asked about the status of entrepreneurship reforms at the university, and later about their perceptions of successes and challenges. Finally, they were invited to provide details about the role of their administrative units in the implementation of the entrepreneurial university vision of the university. Contemporaneous notes of the interviews were made, i.e., during the interview and complemented immediately after the interview. The interviewees were chosen for their expertise and experience in their respective fields. The selection was oriented towards recruiting at least one key informant with administrative oversight from each of the earlier-mentioned university bodies responsible for implementing the university entrepreneurship strategies. Using the interview notes, the researchers looked for patterns and themes in the responses in order to gain a deeper understanding of the attitudes and practices surrounding entrepreneurial education.

The key informants were also asked to provide further data to support their insights, e.g., university documents, academic papers on QU activities, or lists of best practices. To complement the insights of entrepreneurship leaders from QU, the researchers—all current or former academics at the same university—participated in some large-scale academic entrepreneurship conferences organized at QU during 2022, and in 2023, and in some selected entrepreneurship activities. Participatory observations were aimed at validating the gathered data on the limitations and challenges of entrepreneurship activities in QU, and its outreach into the wider entrepreneurship ecosystem in Qatar. In addition, non-academic literature such as reports by active knowledge brokers, (e.g., QU strategies documents, outputs from conferences, and reports from governmental institutions, R&D centres, entrepreneurial centres, and NGOs) were used as supporting evidence for the analysis of the interview-based data.

Secondly, in order to strengthen the contextualization of the analysis, a structured literature review was conducted using the databank Scopus. Peer-review publications were searched that had the following words in the abstract, keywords or title: “entrepreneurship” or “entrepreneurial university”, together with the words “university” or “higher education” as well as the names of any of the GCC states (or the word “gulf”). The resulting

dataset of 191 papers was scrutinized to focus on those dealing with the university entrepreneurship system as a whole or contextualizing the specific focus of the study within this ecosystem. As a result, for example, many of the publications focusing on models and factors determining students' entrepreneurship intentions, or experimentation with entrepreneurial teaching methods, were discarded. Next, publications using the searched words in a peripheral manner or as a buzzword were eliminated, resulting in the final dataset of 20 papers. These papers were used for the justification of the study ("Justification and research focus"), but mainly for the contextualization of the results within the academic entrepreneurship literature on the Gulf region ("Outcomes and critical appraisal" and "Discussion: nuances in entrepreneurial expectations and the role of universities in the Gulf"). Other academic studies known to the authors and suggested during the editing/reviewing of the paper were used for the conceptualization of the paper ("Conceptual background"), and the contextualization of the case study within the broader academic literature on KBE ("Case study" and "Discussion: nuances in entrepreneurial expectations and the role of universities in the Gulf").

## **Results: Qatar University's path as an entrepreneurial university**

### **Entrepreneurship promotion and generation**

*Teaching and learning.* In analyzing the mainstreaming of entrepreneurship in teaching and learning, three main instruments emerged. Firstly, entrepreneurship is directly incorporated into the graduate profiles and teaching methods pursued by QU. The university has developed five Educational Excellence Themes and mandated that at least two of them should be implemented in all teaching courses, with a gradual rollout. These themes are as follows: Digitally Enriched, Learner-Centric; Experiential; Entrepreneurial; and Research-Informed. In order to encourage such an implementation, QU has encouraged and provided training for educators through its Center for Excellence in Teaching and Learning (CETL) on the use of methods beyond traditional lectures, such as interdisciplinary study, hands-on experience in "living labs," guidance from experienced mentors, input lectures from experts and lecturers, and moderated debates, discussion or contests. In particular for entrepreneurial competences, the university has encouraged the use of instruments that provide direct experiences, such as games and simulations, case studies, and formal and informal encounters with entrepreneurs (Interview 4, 2022). Moreover, being "entrepreneurial" is one five graduate attributes suggested for all QU courses (alongside the attributes of competent, lifelong learner, well-rounded, and ethically and socially responsible). The "supporting competences" under the Entrepreneurial attribute are designated by the university as follows: creativity and innovation, collaborative, management, interpersonal, and leadership. Courses that decide to address this graduate attribute are screened regularly by the university curriculum committees (at department, college, and university levels) to validate their suitability to the learning outcomes of each course and the appropriateness of the indicated teaching methods (Interview 4, 2022).

Secondly, the university has established explicit programs and institutions that provide education and learning opportunities on entrepreneurship. An undergraduate program in Entrepreneurship and Innovations was established at the College of Business and Economics, while a Center for Entrepreneurship and Organizational Excellence (CEOE) was created with an executive master's program at the same college. The CEOE should work together with CETL (as the university in-house platform for capacity-building), student organizations, and other affiliated

university groups involved in entrepreneurship in order to support the mainstreaming of entrepreneurial principles into their curriculum development and classroom activities. In addition, in the Honors Program for the top 5% of QU students, enrolled students are provided with a study plan aligned with the concepts of KBE and entrepreneurship. The program has three research-based programs and six content-based modules. Out of the six content-based modules, two address the core of entrepreneurship, namely Design Thinking for Innovation and Entrepreneurship, and Launching an Innovative Business. The other four are arguably aligned with the business-driven ideas of KBE: Mastering Critical Thinking; Leadership in the Age of Disruption; Digital Technologies: Reimagining the Future; and the Fourth Industrial Revolution and Sustainable Development.

Thirdly, QU has other supporting mechanisms for increasing encounters with industry and the early involvement of students in innovative research. For example, undergraduate students are encouraged to participate in awards and grants funded by the university, e.g., the inclusion of undergraduate and graduate students in these grants as evaluation criteria. There are also several student grants provided by QU to fund innovative graduation theses. Furthermore, QU promoted research at an early stage through the National Science Promotion Program, which supports high-school students in transitioning to college by engaging them in scientific research and fostering academic excellence. Faculty members are also encouraged to include students in their grant applications with external funders, e.g., for QNRF national grants (Interview 3, 2022).

*Research and development.* Qatar University has included entrepreneurship in one of three Transformative Priorities (human security, education, and economic sustainability, and entrepreneurship strategies and business models) of its Social Sciences and Humanities Research Pillar (one of four main research pillars for QU). Transformative priorities are aligned with Qatar's development policies (e.g., QNV 2030 and the second development strategy) that reflect the strengths of the university. Specifically, faculty members are encouraged to correspond to such priorities in their research and research-related teaching, such as graduation projects. Research infrastructure at QU has increased significantly; for example, there are currently 400 projects in collaboration with more than 130 countries, with over \$400 million in research grants in the past decade, primarily from the Qatar National Research Fund and international collaboration co-funds (Interview 3, 2022). Some of these projects have been directed towards the entrepreneurship priority covering many critical sub-areas. QU has also recently entered into cooperation agreements with key entrepreneurship stakeholders— e.g., Qatar Development Bank, Qatar Science and Technology Park, and Qatar Business Incubation Center—with the aim of providing resources and support to entrepreneurs and startups stemming from QU students and faculty. In addition, QU bodies such as the Graduate Learning Support (GLS) play a double role of providing capacity-building activities and one-on-one consultations for student-related research as well as promoting industry-related cooperation and improving the employability or entrepreneurship skills of graduates; e.g., with the organization of competitions such as the three-minute thesis (3MT) Award (Interview 5, 2022).

**Self-reorientation towards an entrepreneurial university.** The goal of becoming an entrepreneurial university has been a high priority within the recent institutional transformations within QU. Entrepreneurship and innovation is an enabling strategy within QU's own strategy for 2018–2023, which declares the aim of QU as to "promote the entrepreneurship culture and mindset



**Table 3 Success stories of the business incubator at Qatar University (source: Qatar University Business Incubator).**

Project	Description
Xdensity	As the first Qatari company to develop a comprehensive enterprise resource planning (ERP) application, the firm aims to empower businesses to improve security and profitability through technology. With a focus on the health, education, sports, and media industries, the company offers a wide range of services including website development, mobile application development, dashboard creation, and ERP systems implementation.
Bonocle	Bonocle is a revolutionary entertainment device that empowers the visually impaired to take control of their lives. Utilizing braille as a medium, it combines hardware and software to provide a comprehensive platform for learning, gaming, and productivity applications. This innovative device is designed to enhance the daily experiences and independence of the visually impaired community.
SUBOL	SUBOL is a Qatari technology startup that uses innovative engineering techniques to develop products that meet the needs of both local and international markets. Their flagship product, Samam LP gas detectors, are designed for residential and commercial properties and are a prime example of the company's commitment to creating useful and impactful products.
Sky Climbers	Sky Climbers is an organization dedicated to supporting and nurturing young talent, starting at the age of 16, through seven specialized programs. These programs are carefully crafted to address the needs of the current job market and are led by experienced professionals and leaders from the artistic, government, and private sectors. Sky Agency, a subsidiary of Sky Climbers, is a consulting firm that provides a range of smart solutions and business services for traders and acts as a liaison between government and private organizations.
Being You	Being You is a cutting-edge eyewear platform that utilizes additive technology to create custom-fit, stylish eyewear products. The Being You app allows customers to easily design and preview their own unique eyewear using augmented reality (AR). In addition, designers have the opportunity to contribute new designs to the platform and earn royalties, fostering a strong community of eyewear creators. With Being You, customers can enjoy an unparalleled level of personalization and style that is unique to their face and preferences.

in all university activities” (Qatar University Strategy, 2018–2023). Entrepreneurship and innovation strategies, as part of its transformational strategy, contribute to the achievement of the following goals: Goal 1 – higher education transformation to foster and develop an approach towards and culture of innovation and entrepreneurship in Qatar University and beyond; Goal 2—education excellence through the development of entrepreneurial skills among students, faculty, the Qatari community, and beyond; and Goal 6 – excellence in engagement to strengthen Qatar’s entrepreneurship and innovation ecosystem via collaboration with Qatar’s government, industry, and funding entities. To achieve these goals, QU has developed 58 initiatives, among which several are aimed at promoting an entrepreneurial culture and mindset among students and faculty.

Another example of the prioritization of entrepreneurship and innovation for the self-orientation of QU is the establishment of the Office of Strategic Innovation, Entrepreneurship, and Economic Development (SIEED) under the direction of the university president. SIEED was launched to initiate, manage, coordinate, and execute the development of cross-sector strategies and initiatives involving innovation and transformation, with the aim of contributing towards a holistic innovation, entrepreneurship, and economic development ecosystem across all the QU sectors and QU-owned companies and ventures. The work of SIEED should be carried out in collaboration with the country-wide entrepreneurship and innovation ecosystem. The SIEED office, working in tandem with CEOE, provides a series of consultations, pre-seed funds, and other forms of business development assistance—e.g., for startup pre-incubation, incubation, and acceleration programs – and access to external financing and funds. Moreover, the SIEED office provides advisory services for the design and implementation of innovation and entrepreneurship competencies in curricula and programs.

**Outcomes and critical appraisal**

*Example outcomes.* In this section, we present some of the example outcomes based on data provided from interviewed QU administrators responsible for the entrepreneurship efforts. Firstly, with regard to student-related research, a main outcome is the increase in students collaborating in scientific publications (e.g., from capstone projects) – although no quantification of this outcome could be retrieved. Secondly, Qatar University has been successful in

creating opportunities for students to engage in entrepreneurial endeavours once they have grasped the significance of entrepreneurship and have established an entrepreneurial attitude. The university is significantly involved in providing students with exposure to a variety of problems that stimulate the development of entrepreneurial abilities; for example, by giving them real-life problems to solve, letting them communicate with actual entrepreneurs, or simply providing their training (Interview 2, 2022). In addition to incorporating their business activities within education strategies, by applying what they have learned, students are better equipped to succeed as entrepreneurs in the real world (Interview 4, 2022). Several students were supported in their entrepreneurial endeavors with some examples from the QU Business Incubator, as shown in Table 3.

*Self-perception and contextual limitations.* The qualitative analysis in this paper, through interviews and the analysis of QU strategies, has clearly shown the incorporation of expectations regarding entrepreneurship and their role in economic development. QU has become more aware of the entrepreneurial university model and more explicitly reflective of its contents—whether in teaching, research, or university governance. In this section, some of the identified limitations will be explained and contextualized within the academic literature on the Gulf region. They include the relative novelty of the entrepreneurship reforms in Qatar, the high expectations of the role of QU as a national university, the disparities within Qatar’s entrepreneurship system, and the long-term nature of the change towards entrepreneurship and innovation—particularly in teaching.

Firstly, there is a need for more understanding and utilization of external stakeholders in the QU entrepreneurship community. External parties – businesses, government bodies, and transfer institutions – are themselves defining their entrepreneurship policies in order to reflect their expectations regarding KBE. Cooperation among academia, industry, and government on entrepreneurship is thus still being consolidated, and so far it has focused on partnership with large companies – e.g., with government majority ownership – or with large stakeholders for supporting entrepreneurship – e.g., Qatar Development bank (Interview 1, 2022). This still-emergent industry-academia cooperation is a reflection of the novelty of the Qatari case within the entrepreneurial university sector. Similar to other GCC

states, Qatar seems to have recently moved quite fast with the development of its university entrepreneurial ecosystem and the interventions adopted across the board; for example, in universities' management and strategies, curricula, infrastructure, transfers, and stakeholder engagement (Halibas et al., 2017; Syed et al., 2023). Although the Qatari case suffers from some of the common problems in the GCC region as put forward by Hamdan and Mirza (2021), such as insufficient funding in comparison to high-income countries, we could not confirm the assertion about the lack of leadership in initiating entrepreneurship reforms (Hamdan and Mirza, 2021).

Secondly, with the political will to advance KBE and entrepreneurship, expectations are very high from national universities. As by far the biggest actor in the education system in Qatar, QU has been a main actor in implementing Qatar's KBE ambitions, and this is reflected in the university's reorientation towards entrepreneurship through changes to its academic offerings, research activities, and institutional strategies. These comprehensive reforms reflect the central role of QU as outlined in national visions and corresponding development strategies. In Oman, Sultan Qaboos University, as the only state university, somewhat resembles QU as regards its central role and high expectations within the national entrepreneurship ecosystem (Yarahmadi, 2019). For example, in the UAE and Kuwait, entrepreneurship reforms are distributed over several state and private universities (Yasin and Gilani, 2022). In contrast, by far the largest portion of enrolled students in Qatar are hosted at QU, particularly undergraduate students. For example, in 2019, the number of enrolled university students at the two state universities of QU and College of North Atlantic Qatar (CNL-Q) was 17,000 in comparison to only 2000 at private universities (Planning and Statistics Authority, 2019). CNL-Q (now named the Doha University for Science and Technology) reported the number its students for that period at around 3000 (College of North Atlantic, 2020), and hence QU seem to host more than 80% of students in Qatar, although no official figures are available.

Thirdly, there are important gaps in the entrepreneurial ecosystem of Qatar, with the university's role being to advocate and help bridge these gaps in the national ecosystem. QU can disseminate ideas and practices related to KBE, innovation and entrepreneurship to the wider society and to many parts of the economic sector, which is still largely dominated by government activities (Interview 1, 2022). Qatar has made significant investments in KBE and in international research initiatives in order to commercialize the new knowledge generated (Al-Qahtani and Shirazi, 2023). However, developing the national entrepreneurial ecosystem as a part of KBE investments requires further investments that better link school education and industry-led efforts to the university entrepreneurial ecosystem. Similarly, to other experiences from the Gulf, e.g., in Saudi Arabia (Azim and Hariri, 2018), entrepreneurial education in schools is still underdeveloped. Moreover, in Qatar, the regulatory environment is seen as an important element for incentivizing entrepreneurs who have demanded more regulatory support (Komalasari, 2016). In the Gulf region, the regulatory environment is a key impediment to universities' efforts to move towards innovation and entrepreneurship (Lee and Mirza, 2021). Institutional differences can also affect the performance of business incubators (Dahms and Kingkaew, 2016).

Fourthly, it is difficult to measure and define success, since the entrepreneurship journey is a long one, involving working through the government, market, regulations, sponsors, etc. This journey often takes entrepreneurs far from the university, nationally and internationally, and they often do not stay in contact (Interview 4, 2022). Many of the outcomes of the entrepreneurship efforts at universities are qualitative in nature rather than quantitative, such as changing the mindset of students

through teaching and involvement in extracurricular activities. The university's role is to change the mindset and culture to move students away from their traditional role of securing a job for themselves to creating jobs for others. Entrepreneurs are creative by nature and can generate opportunities for themselves and others (Interview 2, 2022). Changing the students' mindset involves a pluralistic approach including formal and informal education, encounters with internal and external stakeholders, and the use of both types of knowledge and experience. While QU provides a platform for entrepreneurship services and opportunities, the main role of the university is to achieve an appreciation of the importance of developing entrepreneurial skills, such as those that foster innovation, professional growth, and employability, and to allow students to hone their entrepreneurship skills over time (Interview 3, 2022).

Other studies from the Gulf region also confirm that the impacts of entrepreneurship efforts by universities are hard to measure since developing a mindset of taking risks and not fearing failure is long-term impact. For example, entrepreneurs in the Gulf region have different startup methods, such as relying on family networks (Audretsch et al., 2013). Nationals prefer to work in the public sector due to high salaries, job security, and social prestige, while the students' culture does not favor entrepreneurship due to fear of, and stigmatization in the event of, failure (Facchini et al., 2021). In the Gulf region, the university's entrepreneurial education and the transformation of universities towards entrepreneurship have been argued to encourage entrepreneurial success and regional innovation processes (Hashimi et al., 2021; Shahwan and Zaman, 2023; Varadarajan Sowmya et al., 2010). However, promoting an entrepreneurial culture in the Gulf region is a societal task that require long-term education and a change of economic incentives (Jabeen et al., 2017; Zahrani, 2022). Universities themselves need to reflect this culture and take risks through increased collaboration with industries (Bhayani, 2015).

### **Discussion: nuances in entrepreneurial expectations and the role of universities in the Gulf**

The relatively young experience of Qatar among entrepreneurial universities has shown tangible investments, cross-cutting interventions, and some limitations common to the political economy and culture of the Gulf region. In this section, we highlight and contextualize some overarching insights. Firstly, QU has arguably reflected the main premises of the entrepreneurial university in terms of role and implementation processes. The efforts described in this paper are aligned with the premise that the entrepreneurial university is a university that not only supports entrepreneurship but also integrates it into its teaching and research in order to maintain its academic identity (Sam and Van Der Sijde, 2014). The goal of becoming an entrepreneurial university is meanwhile reflected in QU's strategies and activities – with dedicated institutions aimed at achieving this goal. While we could confirm the incorporation of the double understanding of the entrepreneurial university, namely in producing entrepreneurs through knowledge production and research as well as in self-reorientation as an institution supporting entrepreneurship, we could not identify a clear stage of QU's entrepreneurial development. According to the earlier-mentioned framework by Cunningham et al. (2022), QU's efforts seem to incorporate measures from both the exploration and exploitation states. Furthermore, QU seems to be in a phase of redefining and cultivating a university-based entrepreneur identity dedicated to fulfilling the hybrid role of an academic institution and an entrepreneur. This is not uncommon, as developing towards entrepreneurship education is often a dynamic process that

combines exploitation and exploration of knowledge at the same time (Ndou, 2021).

Secondly, political-economic, and cultural-related challenges seem to be the most prominent limitations for scaling-up current university-led entrepreneurial efforts. The dependence on revenues from carbon fuels has meant that the funding of and investments in policies such as KBE and economic diversification are dependent on oil and gas prices (Al-Kuwari et al., 2021; Al-Qahtani et al., 2022). This dependence also influences the participation in and the motivation for private sector jobs and entrepreneurship (Hvidt, 2015). Alongside the culture of job security and lack of risk, studies on university-led entrepreneurship seem to agree on the high relevance of these exogenous factors that hinder the efforts of entrepreneurial universities. These factors reaffirm the notion of the importance of local context in measuring the success of entrepreneurial universities, since success through imitation of successful experiences can come with illusive expectations (Kempton, 2019).

Thirdly, there are important internal factors important for the success of entrepreneurial universities, including leadership, consistency, and ownership. The decision to engage in entrepreneurship is a systematic process based on decision-making and leadership skills of university administration. Good governance and strong leadership are necessary for the establishment of an entrepreneurial culture at higher education institutions in the Gulf states (Al-Qahtani and Shirazi, 2023). The existence of institutionalized processes for monitoring, evaluation, and organizational learning is critical for promoting entrepreneurship in Gulf universities (Al-Jayyousi et al., 2019). At the same time, universities need to develop consistent strategies for the long term, since the transition towards a genuine entrepreneurial university will take time to materialize, and it also relies on soft instruments such as persuasion and leadership communication. The transformation into an entrepreneurial university entails more than just establishing funds and infrastructure; it necessitates a shift towards an entrepreneurial mindset and ethos within a university (Cunningham et al., 2022). It can therefore be achieved through effective internal communication and by establishing a model or framework that integrates entrepreneurial activities across all sectors. Such deliberative processes in the development of entrepreneurial universities can enhance ownership and sustainability of the university's reforms.

Fourthly and finally, our research on the Qatari case did not result in clear evidence regarding adopted models (i.e., policy-borrowing vs. home-grown models) or trade-off balancing (between economic, social, and sustainability goals). There are various models for the integration of entrepreneurial activities and best practices at the global level that could be considered in the Gulf region—e.g., from Anglo-Saxon countries, Singapore, or Malaysia – but our research did not indicate the adoption of a specific model. While many entrepreneurial universities seem to imitate models stemming originally from the US or Europe based on universities as regional innovation hubs (Gibb et al., 2013), the Qatari case seems to incorporate its own development imperatives such as the need for diversification and the empowerment of local forces. At the same time, there is no entirely home-grown shape for the entrepreneurial university model in the Gulf region, as the interventions largely resemble those in other international cases. The priorities within these interventions seem to favor economic goals in terms of finding the most “efficient” solution for innovation-driven development, rather than necessarily the most effective or sustainable one (Cunningham et al., 2022).

In Qatar, issues such as social, entrepreneurial, and environmental sustainability are reflected within the current university entrepreneurial ecosystem. However, the bulk of interventions are tilted towards the immediate priorities of economization and

commercialization of innovations to create more locally anchored private-sector jobs—optimally by nationals and for nationals. Despite the fact that universities' funding is still heavily reliant on governments in the Gulf region, there is an argument for contextualizing the current entrepreneurial reforms within the notions of neoliberalization and academic capitalism within higher education (Jessop, 2017). Besides, it is worthwhile to contextualize the Gulf's experiences within entrepreneurial universities in other regions. For example, studies from some Latin American universities show differences with regard to the orientation of entrepreneurial university reforms to sustainable development at large (Guerrero and Lira, 2023), the lack cultural barriers in industry-academia cooperation (Amaral et al., 2011), or the imperative of initiating such reforms for the financial survival of universities (Bernasconi, 2005). In contrast, our study shows the relevance of cultural challenges, the dominance of economic diversification objectives (rather than sustainability) or the good public financing of universities. Besides, the Gulf seems to show differences to experiences from Singaporean and European universities which exhibit long legacies of university-industry cooperation and government-led investments in promoting entrepreneurship at universities (Lombardi et al., 2017; Cai and Ahmad, 2023, Mok, 2015). Some studies on developing countries confirm the experiences from the Gulf regarding the importance of contextual challenges such as the lack of well-established ecosystems and mindsets towards entrepreneurship (Bizri et al., 2019; Mentoor and Friedrich, 2007). More research would be also necessary to better understand the economic and normative nature and impacts of entrepreneurship reforms within HEIs in the Gulf. Besides, all GCC states seem to implement these reforms, and often compete in producing entrepreneurs and attracting capital towards their universities. Therefore, there is also an argument for studying these reforms within (geo) political notions of entrepreneurial universities, since these universities are also manifestations of power and ideas about security, belongings, and territories (Moisio, 2018).

### Conclusion and recommendations

This paper has examined the characteristics and limitations of the Qatari case with regard to entrepreneurial universities, including reforms in teaching and research, leadership and governance, and organizational capacity. Our findings support the idea that universities play a crucial role in promoting an entrepreneurial culture and mindset among their student and faculty populations. Qatar University, for example, has been engaged in tangible entrepreneurship reforms and increased engagement with external stakeholders, such as local government and businesses. It is also focusing on educating students as prospective entrepreneurs to meet the needs of the country with the skilled human capital essential for a KBE. This is part of its overarching strategic agenda, which integrates various elements within and outside the university to accelerate the transition to a KBE through networks centered on a common goal. In this regard, our case study illustrates a potential pathway for higher education institutions to strategize their aspirations for a post-oil economy as well as providing a road map for how to achieve this transition.

Our research has also identified several contextual limitations. First, there is the shortage of human resources since nationals are more concerned with securing a public sector job and with their fear of failure. Entrepreneurship is considered to be a side job complementary to a public sector job in order to avoid risk. Secondly, innovation is below the expected level of economic development. The input levels are higher than their output levels. Thirdly, the ability of higher educational institutions to achieve their aim – to foster entrepreneurial activity – is being hindered

by the rapid change in organization structure, high expectations from national universities, and the overall underdeveloped national entrepreneurship ecosystem.

Furthermore, our case study on the innovation and entrepreneurial models in Qatar, using the example of Qatar University, has suggested several pathways and recommendations for Gulf region's higher education institutions to become entrepreneurial. Universities must develop long-term and consistent strategies in support of cultural change, such as harnessing teachers and students who aspire to be entrepreneurs. Taking a pluralistic strategy that involves both internal and external parties is helpful in this process, since it opens possibilities to make the most of both internal and external resources and opportunities. This could be accomplished if universities were to improve student and staff understanding of the significance and usefulness of developing entrepreneurial skills. There are, nevertheless, important considerations that such organizations might make to lessen the impact of these constraints; for instance, incentivizing entrepreneurial behavior and attracting and maintaining the right leadership and people who internalize the premises of entrepreneurship and innovation. Universities are considered entrepreneurial when they have no qualms about maximizing their capabilities, decreasing their reliance on public finances, and diversifying their resources. Entrepreneurial institutions are characterized by their commitment to long-term planning, particularly with respect to their financial strategy. Such plans should sustain ideas from development to implementation.

While the transformation towards entrepreneurial universities seems to be underway in Qatar as well as the wider Gulf region, this development is still not well understood nor sufficiently scrutinized. The outcomes of this transformation in terms of job-market participation are yet to materialize, while the structural limitations seem quite strict. Future research can examine the impacts on economic transformation in the Gulf region, as well as the role of foreign talent. For decades, Gulf states have sought to attract and invest in foreign talent by offering compensation and infrastructure on a par with the rest of the world. The reasoning behind this approach is that Gulf states must remain attractive to this class of knowledge entrepreneurs, otherwise they will apply their talent, creativity, and entrepreneurial drive elsewhere. However, this emphasis on foreign talent has generated significant discomfort among the national population regarding government policy. Entrepreneurship reforms, if successful, can have important social implications that require future research. So far, the directions and nature of entrepreneurship models in HEIs are not clear. Future studies may include questions regarding the facilitatory factors for achieving a culture of innovation and the necessary constituents for home-grown models of entrepreneurship through higher education in the Gulf region.

### Data availability

Data sharing does not apply to this article, as no new data were created or analyzed in this study. Data on Qatar University strategies and policies are available at the public domain: [www.qu.edu.qa](http://www.qu.edu.qa).

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## Author contributions

EZ: Conceptualization, Methodology, Formal analysis, Investigation, Fund acquisition, Project management, Validation, Writing- Original draft preparation, Writing- reviewing

and editing. RM: Conceptualization, Methodology, Formal analysis, Investigation, Validation, Writing- Original draft preparation, Writing- Reviewing and editing. MAS: Conceptualization, Methodology, Formal analysis, Investigation, Validation, Writing- Original draft preparation, Writing- reviewing and editing.

## Competing interests

The authors declare no competing interests.

## Ethical approval

The research is exempted from ethical approval since it involves little or no risk to human subjects as the research involves interview procedures of public behavior, below is the link. [https://www.hbku.edu.qa/sites/default/files/hbku-irb\\_application\\_guidelines\\_and\\_faqs.pdf](https://www.hbku.edu.qa/sites/default/files/hbku-irb_application_guidelines_and_faqs.pdf). [https://www.qu.edu.qa/static\\_file/qu/research/documents/qu\\_irb/QU-IRB%20Handbook%20-%20Ethical%20Rules%20and%20Regulations.pdf](https://www.qu.edu.qa/static_file/qu/research/documents/qu_irb/QU-IRB%20Handbook%20-%20Ethical%20Rules%20and%20Regulations.pdf) The links to the Guidelines in Qatar (MOPH) that the other guidelines are based on are below: <https://research.moph.gov.qa/en/Pages/HumanResearch.aspx?csrt=13907209531458391920>.

## Informed consent

The research is exempted from ethical approval, so consent is not required as for this kind of anonymized research.

## Additional information

**Correspondence** and requests for materials should be addressed to Esmat Zaidan.

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