



# Digital Business Incubators and Digital Entrepreneurship: The case of Digital Incubation Center in Qatar

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## Abstract

This study examines the role of digital business incubators, focusing specifically on the Qatar Digital Incubation Center (DIC), in fostering digital entrepreneurship. The methodology used is qualitative, employing content analysis to interpret textual and visual data from sources such as online databases, documents, reports, and academic research papers. International benchmark reports are used to assess Qatar's global ranking in research, development, innovation, and digital entrepreneurship. The findings highlight Qatar's commitment to digital transformation and its efforts to create a supportive ecosystem for entrepreneurship. They underscore Qatar's dedication to driving innovation through investments in telecommunications, information technology, education, and initiatives like the Qatar National Research Fund. Qatar's digital competitiveness is evident through its ICT infrastructure, extensive 5G implementation, and initiatives like the Smart Qatar Program. The DIC plays a pivotal role in supporting digital entrepreneurs by providing resources, mentorship, and a collaborative environment. By collaborating with government agencies, academic institutions, and industry partners, the DIC contributes to the growth and success of digital startups, fostering innovation, and positioning Qatar as a hub for digital entrepreneurship and technological innovation. This study provides valuable insights into the development of Qatar's digital entrepreneurship ecosystem and the significance of digital business incubators, including the DIC.

**Keywords:** digital business incubators, digital entrepreneurship, Digital Incubator Center (DIC), Qatar.

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## Introduction

Digital business incubation plays a pivotal role in nurturing the development of new digital businesses and startups by offering essential resources, guidance, and mentorship (Bist, 2023). Its fundamental objective is to cultivate innovation and entrepreneurship, spurring the creation of novel products, services, and employment opportunities (Al-Housani et al., 2023; Bist, 2023). Additionally, digital business incubation harnesses the power of digital technologies to optimize resources and drive transformative changes in the way business is conducted.

Digital entrepreneurship is a dynamic and rapidly evolving phenomenon that generates economic and social value through the use of innovative digital technologies (European Commission, 2015; Sahut et al., 2021). It encompasses the creation of new ventures and the transformation of existing businesses, driving innovation and economic growth (Fernandes et al., 2022). This rising trend relies on the effective utilization of socio-technical digital enablers to acquire, process, distribute, and consume digital information, leading to the emergence of innovative ventures and opportunities (Sahut et al., 2021). Scholars such as Nambisan (2017) and Sahut et al. (2021) have explored the impact of pervasive digitalization on entrepreneurship and the need for new theories incorporating digital elements.

At its core, the term 'digital' in the context of the digital business model refers to the utilization of digital technologies to enable enhanced resource optimization and facilitate interactions between entities and systems (Li et al., 2012; Planing, 2017; Veit et al., 2014). Advancements in digital technologies trigger fundamental changes in the way business operations are carried out and revenues are generated, highlighting the pivotal role of digital technologies in shaping the landscape of digital business incubation and driving innovation, novel revenue streams, and entrepreneurial growth (Li et al., 2020).

Digital entrepreneurs thrive on agility, adaptability, and a deep understanding of digital trends and consumer behaviour (Fernandes et al., 2023, 2022). They harness technological advancements like artificial intelligence, blockchain, and the Internet of Things to create groundbreaking products, develop digital platforms, and pioneer new business models. By capitalizing on digital ecosystems and leveraging data-driven insights, digital entrepreneurs transform industries, drive digital transformation, and shape the future of business.

Qatar Foundation established the Qatar National Research Fund in 2006 in an effort to pave the way towards a more knowledge-based economy. QNRF's funding programmes ensure that Qatar's brightest minds and their collaborators around the world have the resources necessary to pursue world-class research (QNRF website, n.d.).

Recently, the digital ecosystem in Qatar has been advancing rapidly. In addition to direct government investments in the sector, entrepreneurs and SMEs are reaping the benefits from a range of incubation and acceleration programs established by governmental organizations. These programs, offered through institutions such as the Digital Incubation Center, Qatar Science and Technology Park, Qatar Business Incubation Center, Qatar Fintech Hub and Qatar University, provide various offerings supporting fledgling entrepreneurs in research and development, ideation and business planning, prototyping and manufacturing, and funding and marketing (Tasmu Digital Valley, 2022).

The Digital Incubation Center (DIC) under the Ministry of Communications and Information Technologies targets entrepreneurs capable of harnessing emerging technologies to contribute to Qatar's digital economy (DIC website, n.d.). The DIC

plays a pivotal role in boosting ICT innovation, particularly among young people in technology-related businesses at critical early stages.

This study aims to highlight Qatar's efforts in digital transformation and the foundations of supporting entrepreneurship, particularly digital entrepreneurship. It aims to evaluate these efforts internationally based on International benchmark reports and determine their ranking. Additionally, it aims to shed light on digital business incubators and their role in developing digital entrepreneurship through an analysis of the results of the Digital Incubation Center (DIC) in Qatar.

## Literature review

The literature review emphasizes the significant role of entrepreneurship in a country's economic vision, particularly for diversifying the economy. Promoting entrepreneurship and creating a supportive environment for startups are widely recognized as drivers of economic diversification and sustainable development (Al-Housani et al., 2023; Al-Mulla et al., 2022). As highlighted by Al-Housani et al. (2023) and Al-Mulla (2022), entrepreneurship plays a crucial role in converting resource-rich nations into sustainable economies. In line with Qatar's National Vision 2030, which acknowledges the limitations of relying solely on oil and gas resources, Qatar is actively pursuing a diversified economy by implementing numerous initiatives aimed at fostering innovation, research and development (R&D), and entrepreneurship (Hassen, 2019).

A key aspect of these initiatives is the implementation of incubation programs that support and nurture entrepreneurs, enabling them to transform ideas into viable businesses (Al-Mulla et al., 2022). Qatar has seen the emergence of several entrepreneurship support organizations, including the Qatar Business Incubation Centre (QBIC), Digital Incubation Center (DIC), and Qatar Science and Technology Park (QSTP), demonstrating the recognition of entrepreneurship's importance and the commitment to supporting aspiring entrepreneurs (Al-Mulla et al., 2022; Hassen, 2019).

Business incubators, highlighted by Al-Mulla et al. (2022) and Hassen (2019), play a crucial role in fostering innovation, which is key for economic diversification and reducing reliance on oil revenues. These incubators provide financial and non-financial services, such as funding, guidance, mentorship, and support, contributing to the development of a vibrant entrepreneurial ecosystem and driving economic growth in Qatar.

Digital entrepreneurship, a dynamic and evolving concept, involves creating new ventures and transforming existing businesses using innovative digital technologies to generate economic and social value. It drives innovation, economic growth, and job creation by leveraging these technologies (European Commission, 2015; Sahut et al., 2021). Business incubators have emerged as key players in fostering digital entrepreneurship, providing resources, support, and networking opportunities to aspiring entrepreneurs (Al Sharif et al., 2022; Bist, 2023). These incubators facilitate the growth of innovative ventures and help entrepreneurs navigate digital challenges effectively (Al Sharif et al., 2022; Bist, 2023), fostering collaboration, knowledge-sharing, and a vibrant digital entrepreneurship culture.

Hassen's (2019) chapter on entrepreneurship, ICT, and innovation highlights the Digital Innovation Center (DIC) as a significant entrepreneurship organization in Qatar. Specifically, DIC focuses on boosting ICT innovation among young entrepreneurs during the critical early stages of establishing or growing technology-related businesses. This chapter fills a research gap by discussing the role of incubators in Qatar.

This literature review aims to explore existing research on digital entrepreneurship and digital incubation, with a specific focus on the role of DIC in promoting digital entrepreneurship. While there is limited literature specifically addressing the Qatari Digital Incubation Center (DIC), this review seeks to examine relevant studies on business incubators and their role in fostering digital entrepreneurship.

## Methodology

Considering the methodology aspects, this study employs a qualitative research approach that involves content analysis. Content analysis is used to examine and interpret both textual and visual data collected from diverse sources, including online databases, documents, reports, and academic research papers. This technique is used to explore the role of digital business incubators in fostering digital entrepreneurship, with a specific focus on Qatar Digital Incubation Center (DIC).

International benchmark reports have been utilized to assess Qatar's global ranking and compare it with other Arab countries in terms of research, development, innovation, and digital entrepreneurship. These reports provide insights into the effectiveness of Qatar's innovation and digitalization strategy, including the digitization of entrepreneurial activities, as the foundation for digital entrepreneurship. Additionally, statistics derived from the Digital Incubation Center (DIC) platform, supporting digital entrepreneurs from ideation to commercial project implementation, have also been considered.

It should be highlighted that throughout the research process, ethical considerations are upheld. This includes ensuring proper citation and referencing of all sources to maintain academic integrity.

By following this methodology, the study aims to contribute valuable insights to the field of digital entrepreneurship and shed light on the role of digital business incubators, specifically the DIC, in fostering entrepreneurial growth and innovation within the Qatari context.

## Digital business incubators

These are business incubators that focus on supporting and developing digital startups and innovative companies (Brahmi, 2021, p. 699). And the virtual incubator is defined as 'a non-material workspace provided online that offers a service of connecting entrepreneurs with investors and advisors' (Mörke and Swensson, 2020, p. 21). According to Zedtwitz categorization and definition of incubators, a virtual incubator is an online non-physical workspace but instead an incubator that offers the service of linking together the entrepreneur with investors and advisors (Mörke, Swensson, n.d.). Lewis et al. define the virtual incubator as an incubator that does not provide physical space for entrepreneurs and startups (Mörke, Swensson, 2020, p. 21). A virtual business incubator is a type of business incubator that provides entrepreneurs with access to business resources and services remotely, typically through an online platform (FasterCapita, 2023). Therefore, the precise concept of virtual business incubators focuses on leveraging information and communication technology to provide the incubation process and its accompanying services within a purely digital environment, whether through websites or through specialized digital platforms.

## Digital entrepreneurship and digital entrepreneur

Due to the recent digital transformations in the world of finance and business, and the ongoing digital revolution, a new type of entrepreneurship has emerged that

integrates digital technologies and entrepreneurship, referred to as "digital entrepreneurship". It is considered a subcategory of traditional entrepreneurship, with a focus on leveraging new digital technologies (Shehadeh, 2022, p. 44).

The European Commission has defined digital entrepreneurship as "Digital entrepreneurship involves the creation, or recognition, of digital business opportunities, and the development of innovative digital business models that create value for customers and stakeholders. It encompasses the application of digital technologies to create new products, services, processes, and business models, and the use of digital platforms and ecosystems to reach and engage customers, suppliers, and partners" (European Commission, 2015).

Digital entrepreneurship is the use of digital technologies, along with creative and innovative thinking, to create new business models, products, services, processes, and experiences that are aimed at solving real-world problems, and creating value for customers and society at large" (Bosma et al., 2021).

As for the digital entrepreneur, he is the entrepreneur who manages his business through platforms or electronic networks, and possesses technical skills and abilities that help him execute various business operations online (Al-Barashdia, 2021, p. 4).

## **Elements of digital entrepreneurship**

The European Commission has identified five fundamental pillars or components upon which digital entrepreneurship is based, which can be summarized as follows (European commission, 2021):

- Digital database and ICT market: It is a database used to store complex data used by computer systems. ICT is one of the most important technologies responsible for organizing digital businesses and projects. It is through this technology that information is electronically transferred between industries and companies. Electronic innovations, as well as e-commerce, can be supported, and new businesses can be established, strengthened, and developed;
- Availability of risk capital: It is one of the key elements in the success of digital entrepreneurship. Providing risk capital can encourage entrepreneurs to launch new businesses and projects, as well as to develop innovative ideas that can transform markets;
- Effective business incubators: They provide new businesses with the support and services they need to grow and thrive. Incubators help entrepreneurs in developing their business ideas, finding funding sources, and accessing important industry networks;
- Skilled workforce: It is essential for the success of digital entrepreneurship to have a workforce with a high level of skill and expertise in digital technologies, business management, and innovation;
- Favorable regulatory environment: The regulatory environment plays a crucial role in creating a favorable environment for digital entrepreneurship. It must be flexible and adaptable to changes in the digital world, as well as encourage innovation and provide businesses with the freedom to operate and compete in the market.

## **The stages of digital entrepreneurship**

Digital entrepreneurship typically involves several stages or steps. Here are the commonly recognized stages in the process of digital entrepreneurship:

- Idea Generation: Idea Generation: This initial stage involves identifying and generating innovative ideas for digital products, services, processes, or business models. Entrepreneurs explore market trends, consumer needs, and emerging

technologies to come up with unique business concepts (Brown et al., 2018; Felicetti et al., 2023).

- Market Research: Conducting thorough market research is crucial to validate the feasibility and viability of the digital business idea. Entrepreneurs analyze target markets, assess competition, identify customer segments, and gather insights to refine their concept. Increasing reach through digital means is a core point here, allowing sustainable entrepreneurs to improve geographical access, overcome preconditions of spatial proximity (Holzmann, Gregori, 2023; Yoruk, Jones, 2020).
- Business Planning: Developing a comprehensive business plan is essential for digital entrepreneurs. This stage involves four key priorities of digital business planning: developing a demand-driven business plan, sensing, predicting, and responding to change, planning holistically across the network, and increasing strategic agility. It highlights the need for companies to adapt to the digital economy, run on data, and consider the entire value chain, including customers, in their planning processes (Howells, 2018; Schwertner, 2017).
- Product Development: Digital entrepreneurs focus on developing innovative business models, products, and services. For instance, companies can enhance production processes or develop innovative after-sales service offerings based on the data generated by their consumers related to the current product (Abdian et al., 2023).
- Launch and Marketing: Once the digital product or service is ready, entrepreneurs proceed to launch it in the market. This involves creating a marketing strategy to generate awareness, attract customers, and drive user adoption. Digital marketing techniques such as social media marketing, search engine optimization (SEO), content marketing, and online advertising are commonly employed (Husain et al., 2020; Pantelimon et al., 2020).
- Growth and Scaling: digital entrepreneurs strive to achieve sustainable growth. During the scaling phase, it becomes essential for digital startups and businesses to innovate their business model to stay competitive. This can be through growth hacking, which emerged as a strategy to support digital entrepreneurs in business-model innovation during scaling (Cavallo et al., 2023).

## **Digital entrepreneurship as part of Qatar's digitization plan**

Qatar has made significant efforts in developing the telecommunications and information technology sector, which has been achieved through establishing the institutional roles by investing in the clear legal framework for telecommunications and postal services. These investments have translated into rapid expansion of communication networks and improvements in the availability and quality of telecommunications services. Qatar ranks first among the highest countries globally in terms of deploying fixed fiber networks and holds a leading position in implementing mobile networks and 5G technology (Kaloul, Talha, 2020, p. 42).

In general, we can say that the pillars of the digital economy in Qatar rely on developing technological infrastructure and enhancing technology and innovation in various economic sectors. Qatar has a strategic vision aimed at achieving digital transformation in the country and promoting the use of digital technology in government, companies, and society in general. Here are some pillars of the digital economy in Qatar.

## Education, research, development and innovation

Qatar's education system consists of five levels: Pre-primary, Primary, Secondary, Higher Education, and Technical and Vocational Education and Training. The Ministry of Education and Higher Education (MOEHE) is the main governing body for the sector. Qatar Foundation provides primary funding for education and ensures high-quality standards through local and global accreditors. Additionally, with the growing importance of technology in student life, e-learning platforms, ed-tech hubs, and accelerators are playing a significant role in enabling digital education (Qatar development bank, n.d., p. 10).

The Qatar National Research Fund (QNRF) is the leading institution in Qatar dedicated to funding research in the national interest. It addresses priority economic and social needs and pursues opportunities to attract internationally recognized researchers to study topics of regional and global importance (Greenfield et al., 2008, p. xi).

Table 1 summarizes the total gross domestic expenditure on research and development (R&D) for the years 2012, 2015, 2018, and 2021. The expenditure on research shows a general upward trend over the years, increasing from 3.25 billion QR in 2012 to 4.45 billion QR in 2021. The most significant increase occurred between 2018 and 2021, indicating a growing commitment to R&D investment. This upward trend reflects a recognition of the importance of research in driving innovation and technological advancement.

Table 1 Total Gross Domestic Expenditure on R&D

year	2012	2015	2018	2021
expenditure on research and development (Value (QR))	3,254,836,183.0	3,054,536,835.4	3,545,524,256.6	4,452,494,481.9

Source: Planning and Statistics Authority, 2022, p. 56.

The results of the 2021 R&D survey, as appear in table 2, show consistency with Qatar's good position in the most accurate Global Innovation Index (GII), placing Qatar in an advanced position in the Arab world, coming ahead of Saudi Arabia and the UAE. This is reflected in the increase in patent applications in recent years, in addition to Qatar's advantage over neighboring countries in terms of scientific production outputs compared to the number of Population.

Table 2 Comparative indicators for science, technology and innovation, 2021 (or nearest)

Country	Oil & Gas	Ratio of GERD to GDP	Number of full-time researchers (per million inhabitants)	Global Information Infrastructure (GII)	U.S. Patent and Trademark Office (USPTO) (per million inhabitants)	Publications (per million inhabitants)
Chinese Taipei	No	3.40	13,800	N/A	550.6	1,675.5
Kuwait	Yes	0.19	514	72	6.7	615.3
Luxembourg	No	0.44	5,076.9	23	145	3,646.7
Norway	Yes	2.15	6,674	20	141.3	4,635.7
Oman	Yes	0.37	281	76	0.4	523.9
Qatar	Yes	0.68	1,470	68	8.6	1,619.3
Saudi Arabia	Yes	0.52	N/A	66	28.2	1,292.7
Tunisia	No	0.75	1,660	71	N/A	4,594
Bahrain	Yes	N/A	N/A	78	N/A	2,733
U.A.E	Yes	1.45	2,379	33	13.1	120.1
Jordan	No	0.7	596	81	N/A	4,792

Source: Planning and Statistics Authority, 2022, p. 14.

Qatar is actively developing its incubation and acceleration ecosystem to support startups and innovation. The country's public and private sectors have shown support through various incubators, accelerators, and research institutes. The Qatar Science and Technology Park (QSTP) plays a significant role in providing services and support to startups, with a focus on ICT and digital solutions (Communications Regulatory Authority in Qatar, 2022, p. 51). Figure 1 shows the key innovation players in Qatar.

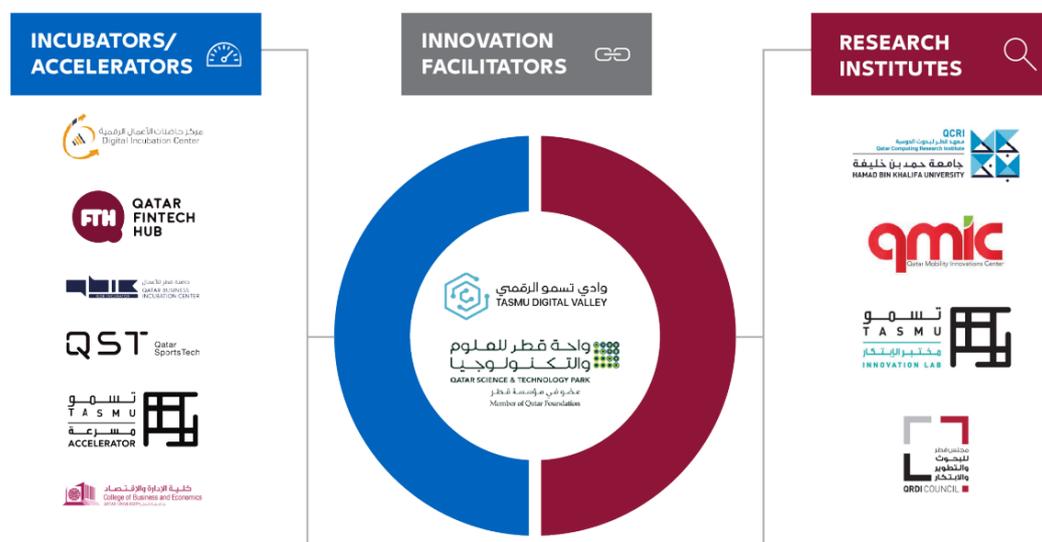


Figure 1 Qatar's Key Innovation Players

Source: Communications Regulatory Authority in Qatar, 2022, p. 52.

As shown in table 3, Qatar ranks 52nd overall in the Global Innovation Index (GII) 2022. Among the Arab countries listed, Qatar holds a relatively strong position in terms of innovation. It surpasses Saudi Arabia in all pillars except for Human capital and research, and outperforms Kuwait, Morocco, Bahrain, Tunisia, and Egypt in most pillars. However, it falls behind the United Arab Emirates in several categories. Overall, Qatar demonstrates a noteworthy presence in the Arab region's innovation landscape, as highlighted by its rankings in the GI 2022.

Table 3 The overall ranking of the Global Innovation Index (GII) for the year 2022, according to innovation pillars

Country/economy	Overall GI	Institutions	Human capital and research	Infrastructure	Market sophistication	Business sophistication	Knowledge and technology outputs
United Arab Emirates	31	6	17	7	23	26	59
Saudi Arabia	51	50	30	53	22	53	65
Qatar	52	25	56	29	47	73	69
Kuwait	62	86	55	36	73	101	68
Morocco	67	85	83	89	74	94	64
Bahrain	72	27	78	32	75	93	73
Tunisia	73	92	45	85	98	116	53
Jordan	78	45	76	100	52	75	76
Oman	79	57	40	56	71	97	94
Egypt	89	111	97	93	86	103	79
Algeria	115	99	82	102	125	120	118
Yemen	128	132	124	120	87	127	124

Source: Dutta et al., 2022.

## Information and communication technology Infrastructure

Qatar has achieved significant progress in developing its ICT sector and establishing a robust digital economy. With investments in a strong ICT infrastructure, including fiber and mobile networks with extensive 5G implementation, Qatar meets the growing demand for connectivity and adopts emerging technologies like IoT and cloud services. Localizing data center capacity, led by companies such as Meeza, Microsoft, and Ooredoo, helps enhance efficiency and reliability, transforming Qatar into a global digital hub (Tasmu Digital Valley, 2022). The digitization of business registrations through the Single Window platform and streamlined licensing platforms by entities like Qatar Financial Centre and Qatar Free Zones have improved the business environment. These endeavors support Qatar's ambition of nurturing an advanced knowledge economy and positioning itself as a key player in the digital sector (Writer, Peninsula, n.d.).

As shown in table 4, Qatar has consistently demonstrated a strong position in digital competitiveness rankings among selected Arab countries. With rankings ranging from 28th to 31st between 2017 and 2021, Qatar's focus on digital innovation and advancements has contributed to its competitive edge in the digital landscape. This trend is expected to continue with a projected improvement to the 26th rank in 2022, showcasing Qatar's commitment to establishing itself as a leading digital player in the region.

Table 4 Digital Competitiveness ranking of Qatar compared to some Arab countries

Country	2017	2018	2019	2020	2021	2022
Bahrain	-	-	-	-	-	32
Jordan	56	45	50	53	49	53
Qatar	28	28	31	30	29	26
Saudi Arabia	36	42	39	34	36	35
UAE	18	17	12	14	10	13

Furthermore, within the E-government framework, Hukoomi is an online portal in Qatar that provides a wide range of advantageous government services to residents and citizens of the country. The word "Hukoomi" means "my government" in Arabic. Until now, The State of Qatar provide nearly 2,300 services of which 1,500 are complete digital ones, covering the different vital sectors to ease procedures for all audience categories and their access to services (Hukoomi, n.d.).

## Smart cities and Internet of things

Qatar has embraced the concept of smart cities, incorporating technology and connectivity to improve the quality of life for residents. Initiatives like The Smart Qatar Program (Tasmu Digital Valley, 2022).

The Smart Qatar Program (TASMU) launched by MCIT aims to transform Qatar into a leading smart nation, driving sustainable economic growth. With an investment of USD 1.65 billion over five years, TASMU focuses on five priority sectors, as shown in figure 2, and 107 digital use cases to improve the standard of living and enhance Qatar's international competitiveness (Tasmu Digital Valley, 2022).

In line with this vision, the Ministry of Transportation and Communications (MOTC) and Qatar Free Zones Authority (QFZA) established Tasmu Digital Valley as an innovation cluster. TASMU Digital Valley serves as a hub where entrepreneurs, startups, investors, academics, researchers, students, multinational corporations, and institutions collaborate to create innovative digital solutions (Tasmu Digital Valley,

2022). It has successfully enrolled 89 companies as TDV members, including both local and international startups, SMEs, and MNCs. Furthermore, TDV has supported 36 foreign and local tech companies through partnerships, facilitated specific services tailored to their needs, and conducted webinars that reached over 750 attendees across 7 countries. TDV has also activated key partnerships with local entities such as QFZA, QFC, DIC, and iLab to deliver its services effectively. To support the tech market, TDV has developed the Digital Investment Catalogue, which proes a sustainable tech supply chain and attracts foreign tech companies to contribute to the growth of Qatar's tech industry (Tasmu Digital Valley, 2022).

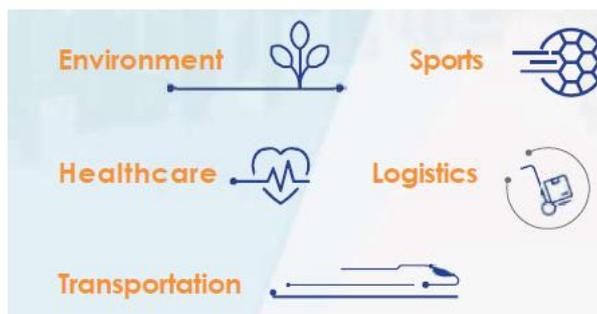


Figure 2 The five priority sectors for digitization in Qatar

Source: Ministry of Communications and Information Technology, 2022, p. 9.

IoT refers to the networked interconnection of everyday objects, which are often equipped with ubiquitous intelligence (Xia et al., 2012, p. 1). Thanks to rapid advances in underlying technologies, IoT is opening tremendous opportunities for a large number of novel applications that promise to improve the quality of our lives (Xia et al., 2012, p. 1).

As shown in Figure 3, the IoT market size in Qatar was estimated at US \$614.6 million in 2022, and is expected to grow by 31% annually to reach US \$1,822.6 million in 2026, with the Qatar's smart city initiatives such as Tasmu Smart Qatar program being a major driver of this growth.



Figure 3 IoT Qatar Market Size (USD Mn)

Source: Tasmu Digital Valley Qatar, n.d.

## Entrepreneurship and digital entrepreneurship

Entrepreneurship is a key driver of development and innovation in the fastest growing and evolving technology sectors globally. 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 (Ben, 2020, p. 190).

Table 5 showcases the institutions and organizations that support entrepreneurship in Qatar. It includes incubators/accelerators like QU business incubator and Digital Incubation Center, associations such as Entrepreneur's Organization Qatar and Qatari Businesswomen Association, and consulting firms like Deloitte and PwC. These entities play a vital role in nurturing startups and providing resources, mentorship, and expertise to foster a thriving entrepreneurial ecosystem in Qatar. Their collective efforts contribute to the growth and success of businesses across various sectors in the country.

Figure 5 The institutions and organizations supporting entrepreneurship in Qatar

<b>Incubators/Accelerators</b>	<b>Associations</b>	<b>Consulting Firms</b>
<ul style="list-style-type: none"> <li>• QU business incubator</li> <li>• Digital Incubation Center</li> <li>• Qatar FinTech Hub</li> <li>• Center of Entrepreneurship</li> <li>• Enterprise Qatar</li> <li>• Flat6Labs</li> <li>• Entrepreneur's Organization Qatar</li> <li>• Global Entrepreneurship Week Network</li> <li>• Qatari Businessmen Association</li> <li>• Qatari Businesswomen Association</li> <li>• Qatar Chamber of Commerce &amp; Industry</li> </ul>	<ul style="list-style-type: none"> <li>• QBIC</li> <li>• Qatar Sports Tech</li> <li>• QSTP</li> <li>• Bedaya Center for Entrepreneurship and Career Development</li> <li>• Oasis500</li> <li>• Risin Ventures</li> </ul>	<ul style="list-style-type: none"> <li>• Deloitte</li> <li>• PwC</li> <li>• EY</li> <li>• KPMG</li> <li>• Other SME's (by areas of specialization e.g. business law, foreign trade, real estate, etc.)</li> </ul>

Source: Villegas-Mateos, 2022, p. 51.

Table 6 summarizes Qatar's rankings in various benchmark reports. Qatar ranks 17th out of 64 countries in the Competitiveness Index, 29th out of 41 countries in the Global Competitiveness Report, 77th out of 90 countries in the Ease of Doing Business report, 68th out of 132 countries in the Global Innovation Index, 13th out of 43 countries in Total Early-Stage Entrepreneurial Activity, 8th out of 44 countries in the National Entrepreneurship Condition Index, and 22nd out of 31 countries in the Global Entrepreneurship Index.

Table 6 Qatar's ranking in entrepreneurship according to international benchmark reports

<b>BENCHMARK REPPORTS</b>	<b>RANK BETWEEN COUNTRIES</b>	<b>SOURCE</b>
Competitiveness Index	17 OUT 64	International institute for management development (2019)
Global competitiveness report	29 out 41	World economic
Éase of doing business	77 out 90	World bank(2019)
Global innovation index	68 out of 132	World intellectual property organization (2021)
Total early-stage entrepreneurial activity	13 out43	Global entrepreneurship monitor (2020)
National entrepreneurship condition index	8 out 44	Global entrepreneurship monitor (2020)
global entrepreneurship index	22 out 31	Global entrepreneurship development institute (2020)

Source: Villegas-Mateos, 2022, p. 145.

For digital entrepreneurship, supporting digital entrepreneurs in their journey from ideation through incubation, startup, funding, launching and eventual evolution into a SME is a strategic priority of the State of Qatar. To this end, several programs are available to help foster an environment of support to enable startups to achieve their aims (see Figure 4).

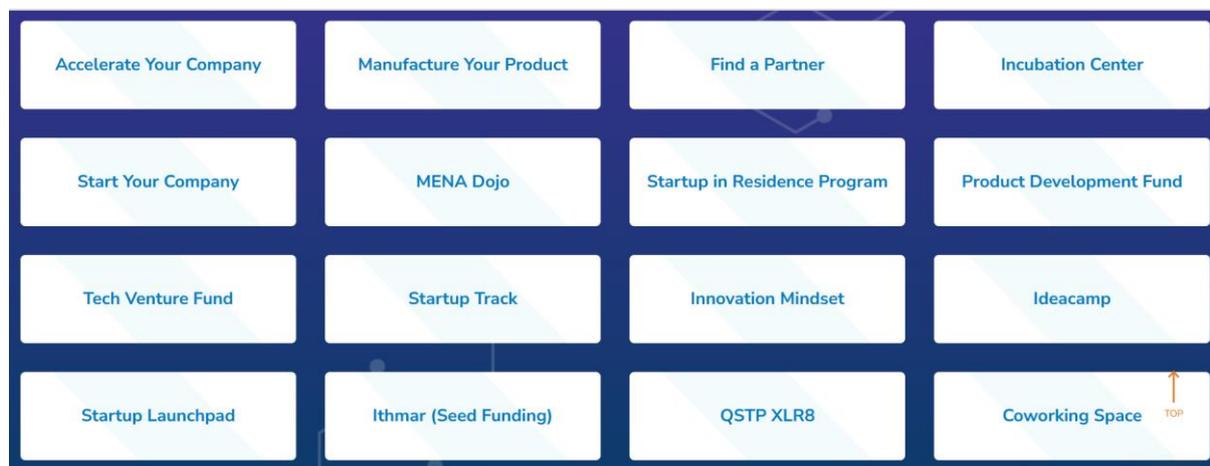


Figure 4 Digital Entrepreneurs Programs in Qatar

Source: Tasmu Digital Valley, 2022.

Table 7 highlights Qatar's ranking among Arab countries in the Global Index of Digital Entrepreneurship Systems (GIDES). Qatar outperforms several countries in digital entrepreneurship, such as Bahrain, Saudi Arabia, Kuwait, Oman, Egypt, Morocco, Tunisia, and Algeria. However, it falls behind the United Arab Emirates, which holds higher scores and ranks. While Qatar has made progress in its digital entrepreneurship ecosystem, there is room for further development and improvement to catch up with or surpass the United Arab Emirates, the leading Arab country in this field.

Table 7 Global Index of Digital Entrepreneurship Systems 2021 scores

Economy	Stand-up system		Start-up system		Scale-up system		GIDES	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank
<b>Singapore</b>	79.8	2	83.6	1	80.4	1	81.3	1
<b>United Arab Emirates</b>	54.9	20	52.3	23	55.7	21	54.3	21
<b>Bahrain</b>	44.2	26	39.1	34	41.1	29	41.5	29
<b>Saudi Arabia</b>	41	30	39.7	32	41.3	28	40.7	30
<b>Qatar</b>	37.9	36	34.1	41	37.6	34	36.5	36
<b>Kuwait</b>	34.3	41	30.4	44	34.1	41	33.0	43
<b>Oman</b>	28.0	50	27.4	53	28.5	47	28.0	51
<b>Egypt</b>	19.4	76	18.0	78	22.1	68	19.8	73
<b>Morocco</b>	19.7	73	19.0	75	20.3	73	19.7	74
<b>Tunisia</b>	19.2	77	19.6	72	19.5	77	19.4	77
<b>Algeria</b>	14.2	93	14.8	89	15.1	92	14.7	92

Source: Ralph, 2022, pp. 13–14.

## The Digital Incubation Center (DIC) in Qatar

The DIC represents a major effort by the government to promote and develop the digital economy in Qatar. The initiative has the potential to attract international

investors and entrepreneurs to the country, thereby boosting the country's economy and establishing Qatar as a hub for digital innovation in the Middle East.

## **Definition of the Digital Incubation Center (DIC)**

The the Digital Incubation Center (DIC) was established by the Ministry of Transport and Communications in 2011 with the aim of creating a supportive environment for digital startups in Qatar through its diverse programs, guidance sessions by digital industry experts, and connecting startups to a wide network of investors (Al-Raya, 2022).

## **The importance and objectives of the Digital Incubation Center**

The Digital Incubation Center (DIC), affiliated with the Ministry of Communications and Information Technology, works to promote innovation and creativity in the State of Qatar, especially among young people in the critical early stages of starting or developing a technology-related business. The incubator focuses on entrepreneurs who are able to harness emerging technologies to create innovative products, solutions, and services that can contribute to supporting Qatar's digital economy. Examples of these technologies include smart city solutions and applications, cloud computing, the Internet of Things, unmanned aerial vehicles or robots, machine-to-machine (M2M) technologies, big data and analytics, predictive analytics, cyber security, wearable products and mobility solutions, e-commerce, and telecommunications services - in the key sectors of the Qatari economy.

## **The mechanisms for supporting startup companies in the Digital Incubation Center (DIC)**

The Digital Incubation Center (DIC) provides support and assistance to incubated startups through the following (DIC website, n.d.).

- Training: conducted either through the Business Academy or remotely, with training courses and programs, or by linking startup companies with trainees from various universities in Qatar;
- Business, technology, and product development guidance by industry experts and successful entrepreneurs;
- Networking support: participation in local, regional, and international innovation and entrepreneurship events;
- Industry expert network: access to potential clients who can support the marketing of startup companies' products and services;
- Investor network: linking with investment forums, angel investors, venture capitalists, and hosting events that facilitate connections between investors and startup companies;
- Co-working space: a free office space with facilities that include hosting cloud, 5G Wi-Fi network, and software licenses.

## **The Digital Incubation Center (DIC) programs**

The Qatari digital business incubator has four main programs (DIC website, n.d.):

- Creative Ideas Camp: The Creative Ideas Camp is a program from the Qatari digital business incubator for entrepreneurs, developers, and designers who have an innovative idea for a digital solution;

- Startup Track: The first year of the Startup Track focuses on the basic stages, starting from the initial model to registering the business in Qatar;
- Business Development Track: The second year of the Startup Track focuses on business development. Established businesses can join the Business Development Track.
- Co-working space: The co-working space changes the way of working. It brings together entrepreneurs, large and small companies in a collaborative working environment to create synergies. The co-working space includes seats, free internet, and other facilities.

The following figure summarizes the stages of a startup company's application to and incubation process in the Digital Incubation Center.



Figure 5 Path of the incubation process at the Digital Incubation Center  
Source: DIC website, n.d.

## The performance of the Qatari Digital Incubation Center

The Digital Incubation Center (DIC) has incubated 160 startups out of more than 1650 applications since its inception. 76 startups have graduated successfully, creating 614 job opportunities. The incubator hosts 551 teams that have generated 675 ideas, and currently incubates 60 startups. The total funding for incubated startups is \$205.4 million, with an average investment of \$3.614 billion per year. The ninth batch of companies that completed their incubation period at the Qatar Digital Business Incubator was celebrated in February of this year, with 18 companies graduating. These companies are: Noor, Mersal, Khtam, Saviour Xavier, Educارسو, Skip Cash, Smart Shuttle, One Life, Bevol, Reward, PetSquare, Wheels, Bookeroo, Story Post, Ringdeem, Beyond Barriers (Madad), Hey Qatar, and Qcompare (Al-watan Newspaper, 2022).

## Examples of startups graduated from the DIC

The Digital Incubation Center (DIC) contributes to the gradual development of the Qatari digital economy through the startups that graduate from it each cycle. Among the graduated startups so far are:

- SkipCash: A Qatari fintech startup registered at the Qatar Financial Center that focuses on providing mobile payment solutions and mobile point of sale solutions in the Qatari market (SkipCash, n.d.).
- Smart Shuttle: The first and only school transportation platform in Qatar that connects busy parents with certified limousine drivers to accompany their children to and from school. The company aims to provide safe, reliable, and comfortable school transportation as well as parental tracking facilities through its dedicated app for complete peace of mind (DIC website, n.d.).
- Dibsy1: An active player in the fintech industry that simplifies payment processes for both banks, merchants, and developers alike (DIC website, n.d.).
- Speedli: The first electronic car wash booking system in Qatar that provides users with the most convenient times, locations, and prices. The "Speedli" app connects

users with car wash service providers through an easy-to-use and time-saving mobile/electronic platform that eliminates the hassle of long queues.

- LAGYY: A mobile application that aims to enhance e-commerce transactions between companies and customers by allowing greater product visibility related to home renovation supplies for consumers.
- Hiba: An indoor farming solution for planting plants in homes, offices, and other places that contribute to purifying the environment using IoT technology and an innovative soil-free planting tray.
- Cwallet: A cross-border transfer platform as an alternative means to send money through traditional money transfer operators (MTOs) in the region using blockchain technology (Cwallet - Beyond Remittance, n.d.).

## Conclusion

The research highlights Qatar's efforts to develop its digital entrepreneurship ecosystem as part of its digitization plan. Qatar has focused on improving its telecommunications and information technology sector, leading to advancements in communication networks and quality services. The country has also emphasized education, research, development, and innovation by investing in its education system and establishing institutions like the Qatar National Research Fund. Qatar's expenditure on research and development has consistently increased, showing a commitment to driving innovation. Qatar has demonstrated a strong position in digital competitiveness among selected Arab countries. The country has invested in ICT infrastructure, including fiber and mobile networks with extensive 5G implementation, establishing Qatar as a global digital hub. E-government services and initiatives like the Smart Qatar Program and Tasmu Digital Valley aim to transform Qatar into a leading smart nation. Entrepreneurship and digital entrepreneurship have received significant attention in Qatar, with the establishment of institutions, incubators, and funding structures to support startups. Qatar's rankings in benchmark reports indicate its competitiveness and ease of doing business in the entrepreneurship ecosystem. The Digital Incubation Center (DIC) is a prominent institution in Qatar that supports digital entrepreneurs. It provides resources, mentorship, and support to transform innovative ideas into successful businesses. DIC offers workspace, access to facilities, and a vibrant entrepreneurial community through its incubation program. It also provides capacity-building programs, workshops, and facilitates connections with potential investors. DIC collaborates with government agencies, academic institutions, and industry partners to create a supportive ecosystem for digital entrepreneurship in Qatar. Through its initiatives, DIC contributes to the growth and success of digital startups, promotes innovation, and strengthens Qatar's position as a hub for digital entrepreneurship and technological innovation.

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