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Sustainable financing for entrepreneurs: Case study in designing a crowdfunding platform tailored for Qatar

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ABSTRACT

Entrepreneurs and SMEs hold a crucial role in reaching a sustainable future by promoting decent work, innovation-driven development, and thus inequality reduction, which all fall into the UN Sustainable Development Goals. In hydrocarbon-based rentier states, however, large enterprises are drivers of economic growth by controlling the large sums of revenue from extracting, processing, and exporting oil and natural gas. Therefore, entrepreneurship in such countries encounters various obstacles, and thus, their number is very limited to foster sustainable development. Therefore, it is paramount to identify the factors that hinder entrepreneurs' and SMEs' growth. The literature shows that the fundamental barriers to financing entrepreneurship in developing countries are the lack of accessible and affordable funds, mentor support, and female participation. However, the Gulf states, particularly Qatar, are rich countries that should not experience financial deficits for entrepreneurs, and there should be underlying other reasons for discouraging entrepreneurship in those countries. This paper first identifies the fundamental problems in mobilizing domestic capital in Qatar, particularly providing funds to domestic entrepreneurs, through in-depth interviews with all the stakeholders. Second, according to the needs, this study proposes a crowdfunding platform including crowdsourcing, Entrepreneurship Majlis, to facilitate sustainable entrepreneurship by (i) exchanging ideas, (ii) providing mentorship, (iii) raising affordable funds, and (iv) supporting female entrepreneurs and investors. This platform will be easily accessible to everyone and tailored to Qatar's country-specific features, such as demography, culture, and religion. Last, the proposed platform is validated after the second round of in-depth interviews with the stakeholders.

1. Introduction

Sustainable development has gained considerable attention, gradually and globally, since the Brundtland report defined it as "sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). In this regard, the United Nations published 17 sustainable development goals (SDGs) covering environmental, social, and economic progress (UN, 2015). This study focuses on SDG 8, the goal of which is to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (UN, 2015). In this regard, various economic development objectives have been targeted by policymakers and academicians, such as: diversifying the economy, improving employment rates, supporting the poor to alleviate their economic status, and enhancing resource utilization (Kaya, Tok, Koc, Mezher, & Tsai, 2019; Salih, 2003). Economic diversification directly impacts a country's long-term economic growth by creating more job opportunities and improving the quality of the jobs. The private sector is an essential ingredient for achieving these targets (OECD and WTO, 2019) and diversifying the economy through investing and improving entrepreneurship. In resource-abundant countries, diversifying the economy through entrepreneurship is a crucial method for offsetting development imbalances caused by oil revenues (Kayed & Kabir Hassan, 2011).

Qatar's economy depends considerably on the hydrocarbon sector, but Qatar has the ambition to diversify its economy and move society towards a sustainable and welfare future by achieving an innovation-driven and knowledge-based development. As a result, Qatar has presented an impressive developmental trajectory among emerging countries in terms of public and private investment backed by strong

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monetary capital. However, despite experiencing outstanding progress in the short term, Qatar's financial sources are considered to be unsustainable in the long run because the nation is still a rentier state (Ari, Akkas, Asutay, & Koç, 2019). This is because the hydrocarbon sector (oil and natural gas) dominates Qatar's economy, contributing more than 50% of its GDP, 85% of its export earnings, and 70% of its government revenues (MDPS, 2020). The Qatari government acknowledges this fact and has been making efforts to reduce the country's hydrocarbon dependency by diversifying the national economy to achieve sustainable development in a holistic manner, one involving the environment, the society, and the economy. In this regard, Qatar launched a robust development plan in 2008 named Qatar National Vision 2030 (QNV 2030) that formulates innovation-driven and knowledge-based strategies in four dimensions— economic, social, human, and environmental development (QNV 2030., 2008). Specifically, Qatar aims to achieve the following goals by focusing on sustainable economic development and diversification: "build efficient delivery mechanisms for public services; create a highly skilled and productive labor force; and support the development of entrepreneurship and innovation capabilities" (QNV 2030., 2008).

The motivatin behind this study is to increase the quality and quantity of entrepreneurs in the countries with high oil revenues. In this regard, this paper aims to contribute to the solution for the following problems in resource-rich countries. First, despite the plenty of financial capacity and sources, the size of funding sources is limited and not easily accessible to a broad portion of society, even though they have established several institutes whose aim is to support entrepreneurship. This is because these institutes focus mainly on specific sectors according to the country's primary needs. Therefore, other sectors might struggle to receive the initial capital from these institutions. Second, entrepreneurs have very limited—if any—access to angel investors because there is no common and local platform available to provide networking for financial matchmaking between them. Third, established startups are not sustained according to the entrepreneurial activity statistics. Fourth, inexperienced entrepreneurs lack mentorship for gaining know-how on the processes and procedures required to establish a startup. Fifth, there is gender inequality in entrepreneurship, as the market is dominated by male investors and thus entrepreneurs worldwide because investors finance entrepreneurs based on same-gender (Allen, Langowitz, & Minniti, 2007; A. F. F. Cicchiello & Kazemikhasragh, 2022; Fuente & Ciccone, 2002; Minniti, 2010).

We selected Qatar as a case study attempting to increase entrepreneurial activity by the proposed crowdfunding and crowdsourcing platform because of several reasons. First, Qatar is a resource-rich country and shares the same problems mentioned in the previous paragraph. It is a high-income country with about US$ 122 thousand on the average GDP per adult in 2018, and more than one-third of them have wealth between US$ 100 thousand and US$ 1 million (Credit Suisse, 2018). Second, Qataris have strong cultural and tribal ties to help each other even at the expense of loss. This social behavior is appropriate for equity crowdfunding, and they can afford to bear the risk associated with equity crowdfunding. Third, Qatar is a relatively religious country, and its society considerably respects Islamic values in every aspect of life, including financial activities. Equity crowdfunding is compliant with Islamic financing because it is based on the profit-loss sharing concept, and hence they can invest with a clear conscience. Another reason is that it is an open country for research and strives for developing its economy and society, and hence easier to conduct interviews to ask people's opinions and propose solutions. Finally, Qatar has substantially limited few female entrepreneurs, which in turn incurs opportunity loss in terms of utilizing their skills and capabilities. In short, Qatar, as a case study, has a substantial potential to generalize the proposed solutions over other rentier countries with high hydrocarbon revenues.

This study also considers mentors in the proposed platform as not only legal and regulatory consultants but also crowdsourcing partners for innovation purposes. Crowdsourcing has considerable potential to solve internal innovation challenges by opening the problems to experienced external individuals, accelerating business development, and decreasing development costs, times, and risks (Natalicchio, Messeni Petruzzelli, & Garavelli, 2017). Therefore, corporates have been broadly adopting crowdsourcing to promote innovation (Cappa, Oriani, Pinelli, & De Massis, 2019). Crowdsourcing also brings many experienced individuals with diversified backgrounds together to provide an intelligent solution for a challenge. For instance, it has significantly benefited in tackling the COVID-19 pandemic by employing the power of crowds to provide rapid, low-cost, and smart solutions to the present health and economic crisis (Vermicelli, Cricelli, & Grimaldi, 2020).

This paper, first, surveys the literature on entrepreneurial sustainability, entrepreneurial financing institutions in Qatar, and equity crowdfunding (see Fig. 1 for research plan). In the second step, the first round of interviews is conducted with the stakeholders (i.e., investors, entrepreneurs, and mentors) to understand the needs, problems, and potential solutions for raising entrepreneurial capital in Qatar. These steps culminated in an online platform called Entrepreneurship Majlis (EM), outlined in this paper, dedicated to bringing stakeholders together to narrow the identified gaps in entrepreneurship. Specifically, *Majlis* is the Arabic term for a gathering, such that Entrepreneurship Majlis implies that people in the Arab region meet new people, discuss entrepreneurship, learn new investment opportunities, and, most importantly, create a networking space. Accordingly, this case study for Qatar developed a prototype for the proposed innovative financial matchmaking platform (i.e., EM) and modified them according to the feedbacks from stakeholders by the second round of interviews. The platform sets out the following goals: (i) to enhance accessibility to funds and proposals, (ii) to initiate and improve networking between investors, entrepreneurs, and mentors, (iii) to organize entrepreneurship processes and guidelines, and (iv) to support female entrepreneurs and investors. In short, the EM platform aims to encapsulate all the stakeholders in a central online place to facilitate the exchanges of ideas, provide mentorship, and raise affordable funds. The proposed platform is tailored for the country-specific features, such as demography, culture, and religion in Qatar. The proposed platform has significant potential to overcome the obstacles identified in the literature review and reported in the interviews, thereby contributing to Qatar's economic diversification.

2. Literature review

2.1. Entrepreneurship and sustainability

Many different definitions for entrepreneurship were introduced and used in the literature. In this paper, the following definition will be referred to; entrepreneurship is the act of seeking opportunities by establishing a venture to fill in an existing gap, solve a problem or add value (Kariv, 2011). In a paper by Acs and Storey, the authors state that entrepreneurship is an essential factor in facilitating economic development; entrepreneurs contribute by identifying resources with low return and utilizing them into high return resources, which improves efficiency (Acs & Storey, 2004). In addition to that, entrepreneurship contributes significantly to the development of the economy by reducing the unemployment rate by creating new job opportunities, innovation, enhancing competition, empowering and providing opportunities to help reduce poverty (Kariv, 2011), and helping transform a traditional economy into a modern/industrial economy (Naudé, 2008). Entrepreneurship also contributes towards the diversification of economies since the private sector's development is essential for the diversification process to be sustainable (Tok, 2018).

Fig. 1. Research Plan.

In the literature, sustainable entrepreneurship refers to balancing the economic, social, and environmental welfare in entrepreneurship. It has recently gained a lot of relevance, attention, and importance with the emerging of sustainable development (Muñoz & Cohen, 2018; Terán-Yépez, Marín-Carrillo, Casado-Belmonte, & Capobianco-Uriarte, 2020). Many authors linked sustainable entrepreneurship to innovation, which is an essential part of sustainable development. Kardos (2012) analyzed and found the relationship between innovation, entrepreneurship, and sustainable development as countries associated with innovative entrepreneurship were in the top rankings in sustainable development. This result indicates that innovation in entrepreneurship is a crucial factor contributing to sustainable development (Kardos, 2012). Entrepreneurship can also be linked to sustainability by linking its impact on the economy to the sustainable development goals developed by the United Nations. Entrepreneurship contributes towards economic diversification, innovation, job creation, and poverty reduction (Naudé, 2008; Tok, 2018), which are all linked to the 8th sustainable development goal; "promote inclusive and sustainable economic growth, employment and decent work for all" (United Nations, 2015).

2.2. Entrepreneurship in Qatar

Qatar Development Bank released the Global Entrepreneurship Monitor & Qatar national report (GEM-Q) in 2019. According to the report, the percentage of total early-stage entrepreneurial activity (TEA) increased from 8.5% in 2018 to 14.7% in 2019, ranked in the 15th position out of the 50 participating countries, and is higher than the global and regional average. As for the age distribution for TEA, the highest age groups are 45–54 and 55–64 at 17.3% and 19.1% respectively, followed by 25–34 and 35–44, both at 15.3% and lastly 18–24 at 8.2%. However, the established business rate shows opposite results from TEA, as the number shows a decline from 4.2% in 2018 to 3% in 2019, ranked in 45th position out of 50 and is considered lower than the global average at 7.9% and the regional average at 6.67%. Lastly, the discontinuation of business in Qatar increase from 3% in 2018 to 6.6% in 2019, ranking 4th out of 50. It was stated that 33.9% reported that the reason for exit is the lack of profitability (Qatar Development Bank, 2020).

2.3. Entrepreneurial financial institutions in Qatar

Qatar has an ambition for developing sustainably by considering economic, social, and environmental sustainability. From the economic perspective, Qatar has established several financial institutions aiming to diversify the economy by supporting entrepreneurship in line with the national vision 2013. The leading organizations that provide financial and non-financial services to guide and support businesses and entrepreneurs are stated in the following paragraphs.

QFC is an organization in Qatar that provides many non-financial services to help stakeholders establish their business locally or internationally. The services they offer range from supporting employment and immigration, legal services to supporting clients through the licensing process, and many other services. QFC's vision is "To transform Doha into a leading global financial and commercial capital" aligning with their mission "To drive economic development and diversification by providing a world-class, commercial, legal and regulatory environment"(QFC, n.d.).

Doha TechAngels is the first organization in Qatar that invests in early-stage technology startups using private Angel funds. They are registered with QFC and are managed by 15 investors with different backgrounds, industries, and experiences. DTA provides financial and non-financial support; they fund startups, guide, mentor, and support the entrepreneurs to ensure the startup's growth and development (Doha TechAngels, n.d.).

QDB is a government-owned entity in Qatar that was founded in 1997. QDB's main purpose is to encourage entrepreneurs in Qatar to support diversifying the economy in Qatar. Their vision is "To develop and empower Qatari entrepreneurs and innovators to contribute to the diversification of the Qatari economy, through successful small and medium enterprises that are able to compete in a global market" (QDB, 2022b). Their mission is "To improve the economic development cycle by providing entrepreneurs and SMEs with a wide range of financial and advisory products under one roof" (QDB, 2022b). Their strategy is to support entrepreneurs and SMEs, which will help diversify Qatar's economy in line with Qatar national vision 2030, moving away from the full dependency on the hydrocarbon industry. QDB is also a powerful supporter of socio-economic development; for example, they helped empower the Qatari workforce and improve living standards (QDB, 2022b). QDB supports entrepreneurs and SMEs by offering many different programs and packages that range from supporting entrepreneurs to develop an idea to start a business and reviewing studies of entrepreneurs to providing legal, financial, and advisory services feasibly. In addition to that, QDB offers various training, workshops, conferences, and competitions (QDB, 2022a).

QBIC is a mixed-use incubation center in Qatar, founded by QDB and the social development center (Nama). QBIC aligned its mission, vision, and strategy to QDBs, aiming to contribute towards diversification of the economy by aiming for startups' long-term success. QBIC targets startups and SMEs to support entrepreneurs and help them grow their business by offering many resources and programs. QBIC's services and programs include incubation, investment, courses aimed to help entrepreneurs start their business or grow their existing venture and connect entrepreneurs with partners (QBIC, 2022a).

Some examples of successful startups that QBIC highlights on their website are S.Ishira and Event Developers. The first example, S.Ishira, is a Qatar based venture that produces natural perfumes blended from luxurious oils. QBIC signed with S.Ishira and supported and guided the founder by providing training, funding, and contacts and is now aiming to further grow the company. The other example is Event Developers, a service that provides event registration through social media. Founded by two entrepreneurs, the venture grew to add 12 additional employees and 20 promoters on-call (QBIC, 2022b).

QSTP is an organization that is under Qatar Foundation. It supports the development of high-tech based products and services and commercializes market-ready technologies. QSTP offers many different programs to support entrepreneurship and contribute to diversifying the economy in Qatar. They provide innovation programs, Tech-incubation, and funding programs. QSTP successfully incubated 22 tech-focused Qatari startups and commercialized 31 products developed through QSTPs incubation and funding programs (QSTP, 2022c).

Some examples of success stories that QSTP highlights are TASMO and Fatora.io. QSTP supported a project called TASMO by ADGS computer systems; TASMO is a software designed to understand the meaning of human language. The product is being used and sold in the international market as approved and sold by Amazon and Microsoft (QSTP, 2022b). The other project is Fatora.io by the company MaktApp QSTP-LLC. Fatora.io is an online application that targets SMEs. It is made to make the payment process between consumers and businesses faster and simpler (QSTP, 2022a).

INJAZ is an organization in Qatar that collaborates with different stakeholders to educate the youth about how to succeed in the global economy. INJAZ is a member of Junior achievement worldwide and INJAZ Al-Arab. Their vision is "to inspire and prepare a generation of Arab youth to use their natural talents, inspiration, passion, and determination to become the business leaders and entrepreneurs of tomorrow who empower their community" (INJAZ Qatar, n.d.). And their mission is "to accelerate young people's ability to contribute to the economic development of nations by connecting them with dedicated business mentors and providing them with the skills and mindset they need to become the entrepreneurs and business leaders stimulating their communities" (INJAZ Qatar, n.d.). Although INJAZ does not offer funding services, they offer many free of charge programs to students in schools and universities to achieve their vision and mission. The programs are categorized into three categories: work readiness and entrepreneurship financial literacy (INJAZ Qatar, n.d.).

Bedaya Center works as advisors to support entrepreneurs in Qatar to launch their startup and start their career. Bedaya was founded by QDB and Silatech; their main purpose is "to help youth discover their path and fulfill their dreams." Bedaya offers different sessions and workshops to guide entrepreneurs to start and sustain their startup; however, Bedaya does not offer funding or financing services Bedaya (n.d.).

2.4. Discussion on entrepreneurial financial institutions in Qatar

The mentioned institutions support entrepreneurship in Qatar, aiming to diversify the economy, and they are divided into two types; entities that provide financial and non-financial services and entities that only provide non-financial services (see Fig. 2). However, even with the existing entities, there are clear gaps that need to be filled for entrepreneurship to flourish further to contribute towards a more sustainably developed and diversified economy. First, some entities only provide non-financial services to support and encourage entrepreneurship. Second, some entities that do provide financial services are only interested in certain sectors to fund. For example, as discussed in the section above, QSTP and DTA are only interested in funding Tech-based startups and products. This creates a limitation in achieving a sustainable economy; as for the diversification to become sustainable, private enterprise is required in different sectors. Third, most of the entities are governmental or semi-governmental entities, highlighting another gap as private money should also be mobilized and invested to further cover the demand and encourage entrepreneurship. Mobilizing private capital would also expand funding opportunities, and thus more entrepreneurs would be funded.

There are two major gaps that need to be highlighted when it comes to mobilizing private capital. First, Angel investors are a great source of funding to entrepreneurs as they provide funding to the startups and SMEs and guide and share their experience with the entrepreneurs, which positively impacts the performance and survival of the startups. Even though there are many active angel investors in Qatar, there is no official platform to connect the investors and the entrepreneurs. According to an interview with investors and potential investors, their current method to find proposals they can review and invest in is building a network with other angel investors who connect them and

Institute	Financial services	Non-financial services	Industry specific	Private
QDB	✓	✓	✗	✗
QBIC	✓	✓	✗	✗
QFC	✗	✓	✗	✗
QSTP	✓	✓	✓	✗
INJAZ	✗	✓	✗	✗
BEDAYA	✗	✓	✗	✗
DTA	✓	✓	✓	✓

Fig. 2. Entrepreneurial financial intitutions in Qatar.

refer proposals to each other. Second, there is a big missed opportunity in turning the general public into investors. Many people have the money and the interest to invest their money but lack the experience, knowledge, and connections to start.

2.5. Angel investors and sustainability

Angel investors can be defined as business-oriented individuals who invest their personal wealth and time in new startups and entrepreneurs (Ramadani, 2009; Wood, Long, & Artz, 2020). To understand how angel investors contribute to sustainability, their motivators, value-added, and impact on the economy are discussed.

First, money is not the only motivator for most angel investors to invest their wealth. According to Ramadani (2009), their motive can also be social responsibility, helping smaller or novice entrepreneurs, passing on their knowledge, and developing entrepreneurship. This way, they contribute to growing the economy and creating more job opportunities. According to a survey done by France Angels (2003), the biggest motivator for angel investors is the value-added, while only 7.8% of those surveyed were motivated by profits. Therefore, according to the angel investor's motivation, it can be concluded that ventures that might not have the potential for a high return on investment but instead focus on social and environmental concerns might have a chance of getting funded by angel investors as long as the value-added is sufficient.

Second, according to the literature, innovation is one of the key elements for sustainable development; to enhance sustainable development, large changes to organizations, supply chains, and communities are needed, which can be achieved by innovation (Silvestre, 2015; Silvestre & Ţîrcă, 2019). Additionally, angel investors contribute to fostering innovation to the same degree as VC. A study conducted by Dutta and Folta (2016) used a sample of 350 technology ventures backed by angel investors. Early-stage venture capital proved that both investment methods have an equal impact on accelerating the innovation rate. However, the authors stated that this impact is non-additive, as their analysis suggested a substitutive role of the two investment types on innovation rate.

Finally, according to Bonini, Capizzi, and Zocchi (2019), angel investors positively affect the performance and survival probability of the companies they back, positively impacting the economy and its development. According to the authors, this is caused by the angel investors' involvement in the development of the venture, as, in addition to their monetary investments, they also offer non-monetary contributions. Another study conducted by Kerr, Lerner, and Schoar (2014) also supports this claim. The authors analyzed the effect of two angel investor groups on the startups they backed. The results suggested that angel investors positively impact the outcome, performance, survival rate, level of employment, and traffic on the startups' websites.

2.6. Crowdfunding

Crowdfunding involves raising a specific amount of funds through an online platform for a SMEs from many investors through an open call to the public. There are four types of investments in crowdfunding (Petruzzelli, Natalicchio, Panniello, & Roma, 2019). The first type of crowdfunding is reward-based, which refers to the search for funds by entrepreneurs from the public in exchange for the product or service after it has been developed (Vismara, 2019). An example of a reward-based crowdfunding platform is Kickstarter, which first launched in 2009 and is the largest crowdfunding platform in the US. Kickstarter has successfully funded around 173,000 projects, with investments reaching $4.7 billion (Kickstarter, n.d.). The second type of crowdfunding is donation-based, which occurs when the public invest into a specific cause, initiative or project; the investments in this type of crowdfunding are considered a donation and are not required be paid back to investors (Vismara, 2019). Naua is an example of an online donation-based crowdfunding platform. Naua is based in Jordan and focuses on social responsibility projects for the community by promoting charity projects to collect donations from the public (Naua, n.d.). The third type is lending-based, where individuals can collectively lend money to entrepreneurs for a venture or project (Vismara, 2019). Kiva is an example of a lending-based online crowdfunding platform (Kiva, n.d.). The fourth type of crowdfunding is equity-based, where entrepreneurs advertise their venture or project through the platform to raise a targeted amount of equity from the investors (De Crescenzo, Ribeiro-Soriano, & Covin, 2019). An example of an equity-based crowdfunding platform is Wefunder, an American-based platform, which to date reached more than $125 million in investments (Wefunder, n.d.).

Over the last decade, the crowdfunding industry experienced significant growth, the growth reached 167% in 2014 (Presenza, Abbate, Cesaroni, & Appio, 2019). Crowdfunding has also attracted many scholars in the literature, becoming more relevant to investments and financing field; the search results on crowdfunding in google scholar increased from 425 to more than 40,000 results (Petruzzelli et al., 2019).

2.6.1. Equity crowdfunding

Equity crowdfunding share was around 7 % of total crowdfunding volume accounted for about $2.5 billion (Barnett, 2015) (see Agrawal, Catalini, and Goldfarb (2014) for a comprehensive literature review on equity crowdfunding). However, it has a great potential to expand equity investments through societies. For instance, the World Bank estimated that approximately 344 million households could invest a small amount through crowdfunding, and each household receives at least US $10,000 income a year with an opportunity to set aside a quarter of their income as savings account for investments. In this regard, this estimate implies that a certain part of the global population can invest in crowdfunding campaigns around US$86 billion a year by 2025. This big picture is also very valid for Qatar, as it is a wealthier state because of natural resource rent, and thus the public has more savings.

In a recent study, Troise, Matricano, Sorrentino, and Candelo (2022) investigated the signaling effect of intellectual capital among innovative projects and equity crowdfunders. They found that intellectual capital positively influences equity crowdfunders' investment decisions and thus increases the success rate in the campaigns. This nascent financial model is rapidly adopted by a diverse range of cases and sectors such as startups, foundations, public infrastructure (i.e., hospitals, schools, roads, bridges, and so on), and political campaigns (Ari & Koc, 2021a, 2021b; Li, Wu, Hsieh, & Liou, 2020). However, there are some issues that have slowed the pace of equity crowdfunding. Regulatory frameworks and law enforcement structures have delayed in many developed countries. Cicchiello and Leone (2020) showed that the countries with delayed equity crowdfunding regulations or the misimpelementation of the rules (such as France, Italy, and Spain) have experienced severe destabilizing effects of regulatory arbitrage. Therefore, countries should learn lessons from pioneer countries, such as the UK, to implement a correct regulatory framework for equity crowdfunding.

2.6.2. Crowdfunding and sustainability

Several scholars have argued that sustainability and crowdfunding are closely and positively related, not only in terms of building social capacity through common thrust development but also in their shared interest in investing in common-purpose projects concerned with the common good, such as clean water, air and energy, environmental protection, education, and health, all of which are essential elements and goals of sustainability (Ari & Koc, 2021a; Bergmann, Burton, & Klaes, 2021; Hörisch & Tenner, 2020; Vismara, 2019). For instance, Troise, Tani, Dinsmore, and Schiuma (2021) illustrated that knowledge-based inputs in agri-food businesses by equity crowdfunders for sustainability-oriented innovations brings not only success in the campaigns but also social sustainability. A study conducted by Hörisch (2015) to test the correlation between environmental and social-oriented ventures and successfully reaching full funding through a crowdfunding platform. The author found that only 10% of all the promoted environmentally oriented ventures were successfully funded, hence, no significant correlation was found. However, crowdfunding still provides an opportunity to sustainable entrepreneurs to get funded through, since it is very hard for sustainable ventures to secure funds through traditional financing schemes (Terrence, Boon, & Pitt, 2017). Also, a study was conducted by Vismara (2019) to assess whether integrating sustainability in a business affects the chance of securing funds from crowdfunding platforms. The study results showed that sustainability does not necessarily increase the chance of securing funds, however it provides opportunities by attracting smaller investors who may consider community logic, instead of traditional investors who focus on high return on investments (Petruzzelli et al., 2019; Vismara, 2019). This shows that sustainable ventures and startups have a better chance securing investments by attracting social investors through a crowdfunding platform than through traditional funding.

2.6.3. *Crowdfunding's benefits*

Crowdfunding provides many benefits for investors and entrepreneurs. The first benefit for the entrepreneurs is that sustainable ventures and startups funded through a crowdfunding platform have a high survival rate after the first year of operation. In a research published by Bento, Gianfrate, and Thoni (2019), an analysis was conducted using the Kickstarter crowdfunding platform. The authors filtered through all projects initiated on the platform and focused only on those concerned with sustainability: 869 projects were identified and consequently analyzed. The results indicated that, 70% of the sustainable ventures or startups, on average, survived after 1 year of operation. This demonstrates that crowdfunding is a great financing source for sustainable entrepreneurs.

The second benefit is that crowdfunding works as a marketing tool for the ventures advertised through the platform (Petruzzelli et al., 2019, pp.2), as it can be used in marketing research aimed at testing the potential for startups to survive in the market. In addition to that, entrepreneurs can sell their products through the reward-based crowdfunding platform, where investors can pre-order the product as an investment method. Finally, it promotes the products to the stakeholders, including investors and entrepreneurs (Petruzzelli et al., 2019; Terrence et al., 2017).

Crowdfunding also yields benefits for investors. It provides an opportunity to individuals with little experience to enter the investment market, as they can choose the amount they can afford or prefer to invest in the startups. This permits the public to invest their savings in an easy and sustainable way, one that would not be possible in any other type of traditional financing. Also, since the invested amount by each investor is smaller than that involved in conventional financing, it reduced risk of suffering huge losses in cases where the startup or project fails compared to that in conventional financing, which usually requires big investments by an individual organization or investor (Roig Hernando, 2016).

2.6.4. *Crowdfunding's risks and limitations*

Even though crowdfunding give entrepreneurs an alternative source of funding for and has many benefits, it is also accompanied by risks and limitations that need to be considered by its stakeholders.

First, the investments amount in crowdfunding is significantly impacted by the geographical distances between the investors and entrepreneurs. Multiple studies by different authors have been conducted to test the correlation between geographical distance and the amount of funds. The results of the studies support that argument, as in the possibility of receiving funds decreases as the distance between investors and entrepreneurs increases (Guenther, Johan, & Schweizer, 2018; Hornuf & Schmitt, 2016; Mendes-Da-Silva, Rossoni, Conte, Gattaz, & Francisco, 2016; Petruzzelli et al., 2019; Niemand, Angerer, Thies, Kraus, & Hebenstreit, 2018).

Second, even though crowdfunding provides many benefits and opportunities for its stakeholders, there is still a risk for fraud. Baucus and Mitteness (2016) argued that a crowdfunding platform could be used for Ponzi schemes, where funds in a new venture or a startup are used to pay the investors from a previous investment. However, the authors emphasize that certifying the crowdfunding platforms would reduce the risk of such fraud.

Third, crowdfunding platforms must limit the number of ventures or projects promoted at a time, since as the number of projects promoted on the platform increases, the likelihood of the projects being fully funded decreases (Babich, Tsoukalas, & Marinesi, 2017; Petruzzelli et al., 2019). This limits the number of startups that can be promoted to secure financing through crowdfunding.

3. Methodology

According to the discussion conducted in the literature review, it is evident that multiple gaps currently exist in Qatar's entrepreneurship field. To validate these gaps and identify, if any, additional gaps, this research collected qualitative data from stakeholders by conducting and analyzing semi-structured interviews, and finally by proposing an alternative solution and mock-ups for the online platform. The detailed research plan and design will be presented in this section.

3.1. *Qualitative data analysis*

Multiple papers and books were reviewed to determine the best method for the analysis of the qualitative data. In the current research, the analysis followed five steps as described by LeCompte (2000): tidying up, finding items, creating stable sets of items, creating patterns, and finally assembling structures.

The first recommended step in qualitative data analysis is to tidy up the data. To do so, the following procedures were applied to the data collected from the interviews: (1) all interviews were numbered and labeled according to their categorization and saved in an individual file; (2) all interviews were organized in the file according to the date of the interview and their categorization; (3) a table was created that included participants' demographic data but excluded personal identifiers, and (4) any missing data were identified, and those participants for whom data were missing were contacted again to provide these data, if possible.

The second step involved the identification of items, "Items are the specific things in the data set that researchers code, count, and assemble into research results." (LeCompte, 2000, pp. 148) For this step, (1) three tables were created for the three different types of stakeholders; (2) interview answers were reviewed and subsequently added to the table as "items," organized by each participant's number for further analysis in later steps. While going through the interview notes, multiple possibilities for how to bundle the items in the tables were considered, which corresponds to the third step of LeCompte's qualitative analysis. In addition, when designing the interviews, the questions were categorized into different themes to improve the flow of the interview. This also helped to make the later bundling or categorization of the items easier. Therefore, the second and third steps of the data analysis were conducted simultaneously. The bundles for entrepreneurs were gaps and barriers, accessibility, access to information or information availability, networking, motivation and values, and gender barriers. Afterwards, the bundles for investors were gaps and barriers, accessibility, networking, co-funding, values, investment preference, and gender barriers. Finally, for the mentors, the bundles were mentorship, education, and suggestions.

The fourth step for the qualitative data analysis involved creating and finding patterns by combining the bundles in a meaningful way. For this step, to identify meaningful patterns, the main focus was placed on the gaps and barriers identified by the participants in the different stakeholder groups, after which the table was reorganized to compare participants who faced the same issues and to compare their experiences by referring to the items in the other bundles. This procedure helped, for example, to reveal repeated issues and gaps identified by entrepreneurs and whether or not their funding sources addressed these problems. Additionally, answers given by established, novice, and potential entrepreneurs and investors were compared to reveal whether any patterns existed or whether they faced different issues.

The fifth and final step as described by LeCompte (2000) was to assemble the patterns identified in the fourth step into structures in order to facilitate the description of the final results.

3.2. Interview planning

Before starting the interview phase, Institutional Review Board (IRB) approval was obtained from the Hamad bin Khalifa University (HBKU) IRB Committee through the HBKU Qatar Biomedical Research Institute (QBRI). This approval was needed to ensure ethical, safe, and risk-free data collection, as the research included human subjects. The research was eligible for "exempt status" approval; all related approval letters from the IRB are presented in Appendix A and C.

Three sets of questions were carefully created for the three identified types of stakeholders. The questions for entrepreneurs and investors were divided into several categories: accessibility, awareness, experience, values and interests, and difficulties, needs, and gaps. The questions were designed to allow the participants the freedom to openly share their experiences and, at the same time, indirectly answer the research questions and validate the identified gaps. The questions were also designed to avoid leading the participants to answer the questions in a specific, pre-determined way, which would have incurred information bias. The interview questions for the three types of stakeholders are included in Appendix B.

Twenty-five interviews were conducted via a phone or virtually through Zoom. The interviews were conducted in either English or Arabic (according to each interviewee's preference). Interviews conducted in Arabic were translated into English for the analysis. The stakeholders were anonymized by excluding their real names or other personally identifying information. This applied to all stages of the research, including the analysis and presentation of the results, although some demographic data were incorporated into the analysis—for example, educational level. However, the identity of each participant was fully protected and relevant data were kept confidential.

Identifying subjects:

1. Entrepreneurs: Any person who identified him/herself as an entrepreneur was eligible. This is because the research aimed to uncover the experiences of entrepreneurs regardless of in which stage of the entrepreneurial process they were involved.
2. Investors: Any person who identified him/herself as an investor was eligible. This is because the research sought to uncover the experiences of investors regardless of their level of expertise.
3. Mentors: Any experienced individual who can be directly involved in a project or contribute to several projects through crowdsourcing as a social responsibility. They possess the requisite knowledge and real-world experience with entrepreneurship or investing, or both. As a mentor can guide many projects, a project also can be guided by many mentors through crowdsourcing.

Characteristics of the interviewees:

To fully comprehend the existing limitations and gaps and to avoid information bias, a diverse range of interview participants were recruited from different circles, at various educational levels, and with different types and levels of entrepreneurial or investment experience.

Inclusion and exclusion criteria:

1. The subjects could be either Qatari or non-Qatari so long as they lived in Qatar.
2. The subjects could be female or male.
3. The subjects must have at least graduated from high school.
4. The subjects could be unemployed, self-employed, or employed in a private or governmental institute.
5. The subjects must be above the age of 18 years.
6. The subjects must identify with at least one of the following categories:
   a. Established, potential, or novice entrepreneur
   b. Established, potential, or novice investor
   c. Mentor

Interview process

1. To ensure that an appropriate sample of participants was chosen, the participants were selected and identified through four different methods. This guaranteed that the participants were chosen from different backgrounds and from different circles, which in turn served to ensure a diverse range of participants, thereby avoiding information bias. These four methods are as follows:
   a. Potential participants were identified through personal connections and contacted by either email or a phone message.
   b. Students and doctors were contacted by email.
   c. Entrepreneurs/founders of established ventures were contacted using their public business email or phone number.
   d. Potential participants were contacted via referral from other participants.
2. Before starting the interview, each participant was given a consent form to sign, which was available in English and Arabic. The consent form included an introduction to the research, the purpose of the research, a summary of the research, participant inclusion and exclusion criteria, participant rights, and information about the principal investigator. The consent form is presented in the appendices. In addition, the purpose of the study was verbally explained prior to commencing the interview, and the interview participants were fully informed of their right to refuse to answer any of the questions.
3. The interviews were semi-structured; the participants were asked a set of prepared questions according to the subject's identified category. The semi-structured interview type was chosen as it allowed the participants more flexibility when answering the questions and sharing their experience. This is preferable, as it can lead to the generation of additional important information (Gill, Stewart, Treasure, & Chadwick, 2008).
4. The interviews took approximately 30 min to 1 h to complete, depending on the level of depth offered by each participant when answering the questions. The interviewer took notes pertaining to the interviewees' answers, which was explained to the interviewees prior to being interviewed.
5. When the first interview phase had been completed, the answers from all participants were analyzed to identify and validate any gaps,

issues, and barriers they faced or were facing in their entrepreneurial or investor experiences.

3.3. Validation interviews: Phase 2

The main aim for the second phase of the interviews is to test and validate the prototype, which is proposed in Chapter 5, by giving access to participants to try using the application. The main questions discussed in the interviews examined whether (1) the aim and features of the application are clear, (2) the application is user-friendly and is easy to navigate through, and (3) to get feedback, recommendations, and suggestions to improve the clarity and flow of the application. The questions that were asked during the interviews are in Appendix D.

Twenty five participants tested the prototype and provided feedback, of whom 12 also participated in the first phase of the interview; the rest of the first phase participants were not able to participate in phase 2 either because of personal reasons or because they were out of reach. Therefore, to fill out the remaining required number of participants for phase 2, additional people were contacted to test the prototype. This turned out to be beneficial for the testing phase, as participants with no prior knowledge of the research topic tested the prototype, which showed whether new users would be able to use and understand the features without any prior explanation or introduction.

4. Results, discussions, and the EM proposal

This section proposes an equity-based crowdfunding platform, Entrepreneurial Majlis, tailored for Qatar based on the literature review and the first round of interviews. Afterward, we conducted the second round of interviews to evaluate and validate the EM proposal and modified the prototype of the online platform accordingly.

4.1. Interview analysis: first round

4.1.1. Participants' characteristics

Participants remained unidentifiable; however, some demographic information relevant to the research was collected. We conducted interviews with eight established, seven novice, and ten potential stakeholders were interviewed. The participants' median age was 29 years, with the youngest participant being 22, and the oldest being 75. All interviewees had at least a high school diploma: 4% of the participants had a high school diploma, 68% were university graduates, 16% had a master's degree, and 4% had a PhD. All participants were employed but one, who had just graduated, and another, who was currently retiring. Finally, for nationality, 64% of the participants were Qatari nationals, whereas 32% were non-Qatari nationals, the remaining 4% represents an interview conducted on behalf of an organization that invest in startups in Qatar, therefore a nationality was not applicable.

4.1.2. Interview results and findings

The interview analysis results will be discussed with reference to the identification of gaps and issues related to accessibility to funds, networking, awareness and information availability, and barriers to females. The first round of interviews' objectives are to extract the following information.

1. Explore the level of awareness or knowledge stakeholders possess concerning Qatar's investment methods and whether the information is available and easily accessible to the public.
2. Explore whether barriers to female entrepreneurs and investors exist in Qatar.
3. Understand the importance of networking in entrepreneurship in Qatar.
4. Understand the current method or mechanism for how stakeholders communicate with or contact each other.

4.1.3. Entrepreneurs' gaps and barriers

The interviews revealed that 69% of the participant entrepreneurs experienced difficulties to secure funds for startups. Even though most participants believed that incubation centers and banks, such as QDB, were a feasible option to obtain funds, many of them voiced concerns over some associated constraints and restrictions, which made them prefer self-funding to incubation centers. For example, one participant stated that she tried to get funds from QDB, but because the sector in which she wanted to become involved was already saturated, they did not accept her proposal even though she had a new idea. Another participant mentioned that obtaining funds from incubation centers is accompanied by some disadvantages, including not having full autonomy.

The second identified gap was the lack of available funds for scaling up established small startups: 46% of the interviewed entrepreneurs, and 63% of the interviewed novice and established entrepreneurs, identified scaling up as a barrier. The most common reason for this was that it was hard to find funds to scale up. As one of the established entrepreneurs mentioned, incubation centers can help fund the initial startup but not the subsequent process of scaling up.

Third, limitations were noted on the information available to the public, as no standard process, procedure, or manual for the logistics required to establish a startup are available. Of the interviewed entrepreneurs, 38% identified this as a gap, many of whom also mentioned that there is no centralized procedure or guideline concerning the approvals required and the process needed to finish the paperwork. Some of the entrepreneurs mentioned that they had to either rely on other entrepreneurs they knew to obtain such information or blindly go from one place to another trying to find all of the required approvals and documents.

The fourth issue that was revealed was that there was no accessibility between entrepreneurs and investors. Two of the entrepreneurs mentioned that there is no official mechanism that can connect entrepreneurs and investors, which makes it difficult to access private funds and find partners. Such gaps are also related to the accessibility of private funds. In response to one question in the interviews, which asked participants whether they had access to or knew how to access private investors, 77% of the participants did not have access to private funds and did not know how to access them. The other 33% stated that they did have access or could access private funds through connections and networking, a factor which was verified by all of the participants to be very important to entrepreneurship.

The fifth gap or barrier that was highlighted was that females, in some areas, might face barriers that make it harder for them to become entrepreneurs. The possible barriers mentioned by the participants in this regard are as follows: (1) Marriage and child-rearing might make it hard for females to find the time to establish a business. (2) Social barriers; for example, females might find it hard to visit some places alone, receive licenses and approvals, and/or contact investors to build a network. In addition, some of the interviewed females stated that they preferred to only work with other females. (3) It might be harder for females to obtain funds in a male-dominated sector.

The final issue discussed by a couple of the entrepreneurs is how relevant processes have become more difficult due to the spread of COVID-19, as each country has imposed its own types of restrictions in efforts to halt or contain the spread of the disease. One example of such barriers noted by the entrepreneurs was that hiring employees has become difficult because of restrictions on international travel.

4.1.4. Investors' gaps and barriers

Some of the issues identified from the interviews with investors followed a similar pattern to that identified from the interviews with entrepreneurs. This further validates these issues and reinforces the assumption that they affect each type of stakeholder.

The first identified issue was the inaccessibility of proposals as multiple investors mentioned that it was very difficult to access proposals unless one had a strong network. This was also noted as the main method for finding proposals by 6 out of the 10 interviewed investors, thereby demonstrating the importance of networking for accessing private funds for entrepreneurship. One participant mentioned that some proposals could only be found if one had a good network, as not all proposals are accessible to the public. In addition, having a network can ensure credibility and build trust between stakeholders.

The first issue also highlights a second issue: without a strong network, it is hard for a potential investor or any member of the public to become an investor. Therefore, this presents a missed opportunity, as one potential investor mentioned in an interview, as some interested individuals may have the financial means to fund startups but are unable to access them. Still, without a strong network, it is very difficult to find proposals to review. This hinders the process for novice investors and therefore reduces the amount and availability of private funds that could potentially be invested to cover the demand of entrepreneurs.

The last identified gap from the investors' interviews concerned barriers to female investors in Qatar, which refers back to the first and second gaps. It was mentioned in two of the interviews that the investment market is mostly dominated by men; and since the main method for finding proposals currently is through networking, it is harder for females to learn about investment opportunities due to social and cultural barriers.

4.2. Platform proposal

4.2.1. The proposed platform objectives

The objective of the proposed framework is to improve entrepreneurship and its funding in Qatar. This objective can be achieved by filling the gaps identified in the literature review and in the interviews. This study proposes a solution to fill these gaps through an online platform called Entrepreneurship Majlis that targets entrepreneurship stakeholders to help them network, pitch proposals, and invest. In this regard, the EM has four main goals as follows.

1. *Improve accessibility to funds and proposals:* The EM will improve accessibility to funds and proposals by prototyping an equity crowdfunding mechanism, which is currently not available in Qatar, in order to support the development of private ventures by providing a transparent, secure, and easily accessible digital platform for all.
2. *Improve and initiate networking between investors, entrepreneurs, and mentors*: Further, as observed from the interviews, networking is an important factor that affects startups in Qatar, whether it be finding funds, proposals, or partners, or asking for advice, resources, and directions. According to an analysis done by Konrad (2013), networking is very important for startups to remove some social barriers that they could face. To improve and initiate networking between stakeholders, the platform will also have a networking feature, which will aid stakeholders in communicating to meet new people to build their network. One of the mentors interviewed suggested the need to build a community for entrepreneurship in Qatar, one where stakeholders can discuss thoughts, issues, and solutions and where small business owners can find and support each other. This will be the aim of the networking feature of the platform. The networking feature will also help resolve the gaps identified above.
3. *Centralize and organize entrepreneurship processes and guidelines:* In continuation of the discussion about filling the gaps identified above and achieving the objectives that have been set, the platform must also collaborate with ministries to centralize and organize relevant processes and create guidelines for entrepreneurs and investors to follow when working on establishing a startup. Creating guidelines and centralizing processes will increase the number of entrepreneurs, as it will make it easier and clearer to understand relevant processes and tasks. In addition, it will also make these processes easier for some females so that they can complete their paperwork online and minimize the number of visits to ministries. This addresses some of the comments from the interviews, where multiple entrepreneurs thought that the logistics involved were very unstructured and thus constituted one of the barriers that hinders and slows down entrepreneurship in the country.
4. *Support female entrepreneurs and investors:* The platform will be tailored to encourage and attract female entrepreneurs and investors to contribute to the industry and diversify the economy. According to Geiger and Oranburg (2018), in research that has examined the relationship between gender and fundraising in equity crowdfunding, campaigns with a female as the primary signatory receive fewer funds. Also, according to a study by Groza, Groza, and Barral (2020), after analyzing data from Spanish crowdfunding, the authors found that females are less likely to invest and contribute than males. The authors suggested that crowdfunding platforms must prioritize attracting more female investors to obtain more investments, as they have a significant potential to contribute (A. F. Cicchiello, Kazemikhasragh, & Monferra, 2021; Groza et al., 2020). This can be done by giving females an option to work and communicate only with other females.

4.2.2. Entrepreneurship Majlis' principles

Enhancing entrepreneurship in Qatar will improve the private sector and contribute to diversifying the economy. The platform will utilize the features according to the following principles to ensure a social, environmental, and economic balance.

1. *Sustainability:* The platform will encourage sustainable entrepreneurship to align its goals with Qatar's National Vision 2030, focusing on balancing economic, environmental, and social sustainability. This can be achieved by building the sustainability principles into the core and strategy of the business model and incorporating it into the profit equation, which will benefit the businesses as it will make them think and plan for the long term.
2. *Shariah Laws:* Investments, proposals, and transactions through the platform will be compliant with Islamic financing rules (i.e., Shariah laws). Therefore, we selected equity crowdfunding as a financing model based on a profit and loss sharing system. Furthermore, the initial startup proposals should be in *halal* [1] sectors; otherwise, the proposals will not be processed.
3. *Equal Opportunity:* Submissions and stakeholders will have equal opportunities when submitting their work or reviewing proposals. This will ensure that credibility is maintained, as it is an important factor needed for the platform to succeed.

4.2.3. Modus operandi of entrepreneurship Majlis

The platform will be an online venue consisting of three parts: crowdfunding, networking, and the centralizing guideline. The prototype features are explained in detail below, and a summary of the features is also given in Fig. 3 (see Supplementary S1 for the associated screens).

1. Crowdfunding: The main objective of this part is to improve transparency, secure transactions, and accessibility for private funds and proposals. In addition, it will attract more entrepreneurs and

[1] Halal is Arabic word for permissible (i.e., products, foods, beverages and so on) according to Islamic laws.

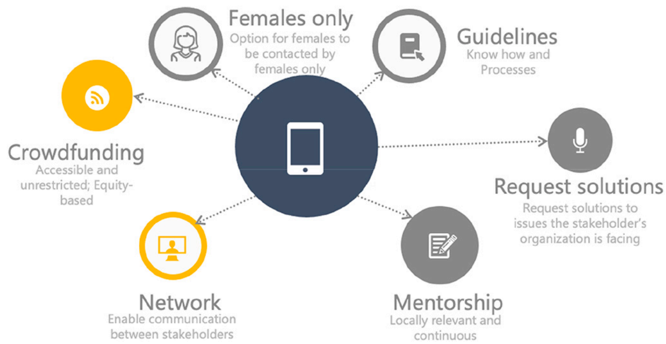

Fig. 3. Summary of features in proposed solution.

investors to join various sectors. The guidelines for the tailored equity crowdfunding are given as follows.

a) The platform will be based on equity-based crowdfunding that is the preferred method according to interview findings, and Sharia-compliant financing model as long as the proposals are in the *halal* sector. Multiple investors expressed their preference to be co-investors or silent investors and to partner with entrepreneurs.
b) All proposals submitted will be reviewed to ensure credibility and fairness, and only proposals that pass the review phase will be accepted and advertised to the public. All proposals must follow Shariah law to pass the review phase and campaign. The campaign will last for a specific period of time. If the campaign fails to reach the funding target by the end of the assigned period, the money will be refunded to the investors.
c) Entrepreneurs will submit their completed proposals to Entrepreneurship Majlis to be reviewed by experts for an opportunity to pitch them to the public to receive funding. At the same time, investors will have a catalog of proposals to go through and review and invest any amount. Once a proposal succeeds in meeting the targeted funds and a team of entrepreneurs and investors is formed, the team will have additional features they can utilize, such as tracking the startup's progress and requesting and setting up meetings for updates.

2. Networking: The main objective for this part is to improve the accessibility of stakeholders and initiate networking between them. The networking part will follow the following guidelines and goals:

a) Users will be able to find and communicate each other by sending direct messages, commenting on proposals, referring proposals, either to find partners or mentors. They can also follow the work of entrepreneurs or investors. This part will work similarly for males and females; however, there will be an added feature to cater to females in Qatar, where female entrepreneurs and investors will have the option to communicate, invest, or receive funds only from other female users.
b) Investors will also have the option to request solutions to a problem, they are facing, from entrepreneurs. Entrepreneurs can view the issues submitted by investors and can pitch an idea to solve the problem for a chance to work together.
c) Stakeholders will share their experiences and thoughts to help other novice stakeholders. According to interview results, many novice entrepreneurs sought the help of established entrepreneurs to get advice when it came to either the process of establishing the business or finding partners and suppliers.

3. Centralized Guidelines: This part covers the legal policies and regulations, and thus highly dependent on a collaboration with ministries. Therefore, this part will be conducted in two phases.

a) In the first phase, a complete guideline will be created for the logistics required to establish businesses, including documents and approvals needed, where they can be obtained, and contact information for additional questions. The guideline will be an ongoing process that will require constant updating; therefore, a contact person from the Ministry will be involved and needed to provide the updates.
b) In the second phase of this part, submitting the required document and getting the approvals will be centralized in the platform by collaborating with the Ministry to receive online submissions of documents and requests.

4. Female features: Additional features targeting at females will be added to support female entrepreneurs and investors by removing the identified barriers. These features will include giving females the option to only contact and work with other female stakeholders, as some stated in the interviews their preference to work with other females only.

4.3. The EM platform validation: second round of interviews

The participants' feedback was analyzed in a similar yet simplified way to the analysis conducted in phase 1. First, the answers were all added to one Excel sheet for a better overview. Then, participants were categorized into phase 1 participants and new participants. After that, repeated answers were highlighted in order to check whether patterns existed, and the issue was observed by multiple testers. Finally, the answers were filtered by only accounting for the relevant feedback and removing excess comments. The feedback obtained was used to revise the prototype and adjust it to improve the platform's features, processes, and usability.

The feedback from the testers was both positive and constructive. First, according to the testers, 88% understood the aim of the platform just from exploring through the prototype, 50% of whom had no prior knowledge of the research topic or the platform as they did not participate in phase 1. Second, for usability, all testers stated that the application is user-friendly and is easy to navigate through. Third, as for the clarity of the features available, 59% of testers thought that the features were clear, while the other 41% had some problems understanding certain features like requesting issues and pitching solutions. In addition, testers were asked to provide feedback and suggestions to improve the platform further. The feedback provided from testers is aimed to improve the clarity of the features and the platform's usability, in addition to improving and highlighting some existing features. According to the feedback from the testers and according to the main revisions discussed in the previous section, multiple screens were revised, and multiple screens were added to make the prototype more user-friendly by improving its efficiency and usability (see new and revised screens in Supplementary S2).

5. Conclusion, summary and future works

The motivation behind this study is to provide a sustainable financing environment for entrepreneurs and investors, as aligned with Qatar's National Vision 2030 and the SDGs. To this end, this study, first, identifies the obstacles faced by stakeholders (i.e., entrepreneurs, investors, and mentors) by literature reviews and in-depth interviews.

Second, we propose a solution for Qatar's financial market to improve establishing startups and investment processes for the stakeholders by introducing a crowdfunding platform tailored to Qatar's country-specific features, such as demography, culture, and religion. That would create more opportunities, attract more stakeholders, and sustain small and medium-sized enterprises (SMEs), which would, in turn, contribute to economic diversification. Finally, this paper modifies the proposed crowdfunding platform according to the feedback from the second round of in-depth interviews and validates the design.

Through this research, a road map is presented to help policy makers improve Qatar's entrepreneurship processes and policies. In addition, this road map and the proposed validated framework can be implemented in both Qatar and other countries in the region that share similar characteristics to improve social and economic sustainability. Moreover, this research can help improve and contribute to Qatar's goal of economic diversification. As the general aim of the research was to improve entrepreneurial activity in Qatar, the findings can be applied in ways that can contribute to diversifying the economy through the development of private enterprise, which is one of the goals of Qatar's National Vision 2030.

Qatar is a developing country that is currently mainly dependent on the hydrocarbon sector. However, the country is aware that this dependency is not sustainable and is putting in a lot of effort and funds into projects, organizations, and creating policies to support diversifying and developing its economy, in contribution to its 2030 national vision (Tok, Koç, & D'Alessandro, 2020). Focusing on the entrepreneurship side of the development, multiple institutions in Qatar aim to contribute to the national vision by encouraging, supporting, developing, and financing entrepreneurship to contribute to the economy. However, a couple of gaps were observed; first, of these existing institutions, only a few offer funding, where some are only focusing on certain industries when investing, which creates a limit on the funding options that entrepreneurs can seek. In addition to that, most entities are government or semi-government entities. Therefore, the need for an alternative financing mechanism that mobilizes private money raises.

According to the review, all the financing mechanisms currently exist in Qatar except for an official crowdfunding platform. This paper proposes the need for an equity crowdfunding platform that is tailored specifically to Qatar's culture and religion, catering to female entrepreneurs, investors and mentors. The proposed crowdfunding platform will have three main purposes. First, it will encourage the public to invest their capital by lowering the investment risk since the amount invested is less. This will turn the public into investors who will mobilize private capital. Second, the platform will improve the accessibility to business proposals and investors. Investors will have access to proposals to review, and entrepreneurs will have the opportunity to pitch their ideas to a large number of investors. Finally, tailoring the platform to support and encourage female entrepreneurs, investors and mentors in Qatar will help fill the gaps regarding gender differences globally and Qatar.

There are multiple gaps identified in the literature that provide an opportunity for future work. First, there is limited published information regarding the success and sustainability of startups funded by existing institutions in Qatar. Second, whether the gender gap in financing a startup exists in Qatar, affecting the numbers of female entrepreneurs, needs to be studied while taking Qatar's culture, traditions, and religion into consideration. Finally, since angel investors are potential investors in crowdfunding platforms, it is essential to study and analyze the motivation, investment patterns, methods, and investment role of angel investors in Qatar.

This research has several limitations. First, the public data and statistics for entrepreneurship in Qatar are very limited, which restricts the research for the critical discussions to a certain extent. For example, there is no data available publicly on the number of startups that were funded by institutes in Qatar, how many of these startups were successfully established and sustained, and how many failed, either before graduating from the program or after. In addition to that, it was hard to understand the full scope of the investment demand in each sector as no studies or statistics are available regarding proposals that failed to get funded by the available institutes. Second, further research is required on whether a gender gap in the financing of startups exists in Qatar, which affects the numbers of female entrepreneurs, taking Qatar's culture, traditions, and religion into consideration. Second, to better support and encourage female entrepreneurs and investors in Qatar, an analysis must be conducted to better understand the barriers and issues they face. A detailed understanding of the female barrier in Qatar will help improve the proposal in terms of attracting and supporting female entrepreneurs. Third, some parts of the proposal are dependent on angel investors; for example, novice investors can gain experience through the platform by following and studying the investment patterns of experienced angel investors using the platform. Therefore, it is essential to study and analyze the motivation, investment patterns, methods, and investment role of angel investors in Qatar.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. IRB approval

QBRI
معهد قطر لبحوث الطب الحيوي
Qatar Biomedical Research Institute
جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY

Qatar Biomedical Research Institute
Institutional Review Board
IRB Approval Letter

Amna AlMulla
Student
Division of Sustainable Development, College of Science and Engineering -HBKU

IRB Protocol Reference Number:	QBRI-IRB 2020-11-048
Project Title:	Alternative financing platform for entrepreneurship in Qatar
Review Type:	Exempt status
QBRI-IRB Approval Date:	11 November 2020
QBRI-IRB Expiration Date:	10 November 2021

The QBRI Institutional Review Board (IRB) has reviewed your application that was submitted the above referenced protocol (2020-11-048). It has been determined that your research proposal is eligible for **Exempt status and Approved** for one year effective November 11 , 2020. This falls under the category (2) in MOPH guidelines, regulations and policies for research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The research must be conducted according to the submitted research protocol outlined in the approved proposal. Please consider that any modifications to any aspect of the referenced study may render this approval invalid. Any amendments must be submitted to the IRB office and it cannot be implemented until the IRB approval has been given.

It is imperative that any serious adverse events experienced during the course of this study by research subjects, are immediately reported to the IRB office.

Request for a renewal, if required, should be submitted to the IRB at least 40 days prior to the expiry date to allow the IRB sufficient time to review and approve the request. It is the sole responsibility of the investigator to ensure the timely renewal of the IRB. Please note that it is the investigator's responsibility to ensure that they have a valid CITI certificate in the relevant curriculum during the course of the approval.

QATAR BIOMEDICAL RESEARCH INSTITUTE
IRB APPROVED
APPROVAL DATE: 11 NOV 2020
EXPIRATION DATE: 10 NOV 2021

Wishing you all the success in conducting your research.

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ص.ب: ٣٤١١٠
الدوحة - قطر
هاتف: ٧١٥٢ ٤٤٥٤ ٩٧٤+
فاكس: ١٧٧٠ ٤٤٥٤ ٩٧٤+

Appendix B. Interview questions-Phase 1

Interview questions

Interview Done:
Interview done in English or Arabic
Established/Novice/potential

Interview questions for entrepreneurs/potential entrepreneurs

1. Demographics
    a. Age group:
    b. Highest Education:
    c. Major:
    d. Employed (yes/no):
    e. Gender:

Accessibility

1. Do you think that certain industries are more popular in the current investment channel and are more likely to receive funds?
2. What method of investment do you prefer? And why?
    a. Incubation
    b. Private
    c. Loans
    d. Self-funding
3. Do you know how to access funds for your business, especially private investors?
4. Are you willing to try another investment channel if made available?
5. How hard is/was it to find funds for your business?
6. Do you think connections and networking are important for finding funds for your proposals?

Awareness

1. Do you know the options that are available to get funded or get mentoring to propose your business plan?
2. Where did you get your information from?

Experience (are they satisfied with their current experience?)

1. For potential entrepreneurs ONLY
    a. What is the main reason that is currently stopping you from establishing your business?
    b. What is the most difficult part when establishing a business and why?
        i. Securing funds
        ii. Scaling up the business
        iii. Finding partners
        iv. Finding investors to present proposal
        v. Activating
        vi. Operating
2. For established entrepreneurs ONLY
    a. How did you raise funds for your venture?
        i. Funding your own business
        ii. Angel investors

iii. Incubators?
iv. Loan from a bank
v. Self-funded

b. How was your experience? Would you use the same method again?
c. Do you find it difficult to secure funds to scale up your existing business?
   i. Do you think it's harder to get scale up funds than establishing funds?
d. What do you think is missing now when you are running your business?
   i. A mentor
   ii. Partner
   iii. Fund for scaling up.

Additional needs?

1. Do you think that having a mentor is important and needed for entrepreneurs to start their own business?

Values/interest (sustainability, social and environmental impact)

2. What industry of startup are you interested in?
3. What is your main goal for opening a business?
   a. Interest
   b. additional income
4. Do you have any values that you base your business on?
   a. Social
   b. non-profit
   c. sustainability

Gender Difficulties/gaps

1. Do you have a preference to work with males/female investors/entrepreneurs?
2. Do you think that in Qatar females are less likely to get funded? Why/Why not?
3. What are the barriers for females to become entrepreneurs?

Any other comments?

Interview questions for Investors/potential Investors

1. Demographics
   a. Age group
   b. Highest Education
   c. Major
   d. Employed (Yes/No)
   e. Gender

Accessibility

1. How do you find new proposals to invest in?
2. Do you think connections and networking are important for finding new ideas to invest in?
3. Do you think it was/is possible for you to become an investor without networking?
4. How hard is it to find the proposals to review?

Interests

1. Are you interested in entrepreneurship investment? investing in small-medium startups?

. (*continued*).

2. Is there a specific industry you are willing to invest in? or do you just look if the proposal is worth it regardless of the industry?
    a. What industry of startup you are interested in investing in?
3. Are you interested/willing to co-fund (not be the primary or only investor)?

Values

1. Do you have any values that you follow when investing in startups?
2. Do you take gender into consideration when deciding what business to fund?
3. Do you have a preference to work with males/female investors/entrepreneurs?

Difficulties/gaps

4. Do you face any challenges when you invest in entrepreneurs?
5. Do you think that in Qatar, females are less likely to become investors? Why/Why not?

Experience

1. Do you think that the current investment mechanisms in Qatar enough to sustain and promote entrepreneurship in Qatar?
2. Do you think that entrepreneurs are aware of the channels to reach private investors?
3. How do you decide if the proposal is worth investing in?

Any other comments?

Interview questions for Educators and Mentors

1. Demographics
    a. Age group
    b. Highest Education
    c. Major
    d. Employed (Yes/No)
    e. Gender
2. Do you think that entrepreneurship is important in regard to diversifying the economy?
3. Do you think that the current funding mechanism (incubation) are enough to cover the demand of entrepreneurship to achieve a sustainable and diversified economy?
4. What do you think are the barriers to establishing a business?
5. In your opinion, why do you think a lot of businesses in Qatar don't survive in the long term? (sustainability)
    a. What do you think is currently missing?
6. From your experience, do you think that constant mentoring/coaching is an important element for the start up to succeed in the long term?
7. Have you considered mentoring entrepreneurs?
8. How much (to what extent) should the mentors support the entrepreneurs?
9. Do you think that teaching entrepreneurship to potential entrepreneurs will make a difference in terms of establishing a business and its survival rate?
10. Any other comments?

. (*continued*).

Appendix C. Consent form

QATAR BIOMEDICAL RESEARCH INSTITUTE
IRB APPROVED
APPROVAL DATE: 11 NOV 2020
EXPIRATION DATE: 10 NOV 2021

QBRI
معهد قطر لبحوث الطب الحيوي
Qatar Biomedical Research Institute
جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY

IRB number: ……………………………

Principal Investigator: ………………

Project Title: ……………………………

IC Version Date: ……………………….

INTRODUCTION

We invite you to take part in a research study called "Alternative financing platform for entrepreneurship in Qatar". You were selected as a possible participant in this study because you fall in the category of our research spectrum. Please take your time to read this form, ask any questions you may have and make your decision.

PURPOSE OF THIS STUDY

This study is being done to investigate and identify the gaps that exists in the entrepreneurship investment sector, and whether an alternative financing mechanism for entrepreneurship is required in Qatar.

WHAT ELSE SHOULD I KNOW ABOUT THIS RESEARCH STUDY?

It is important that you read and understand several points that apply to all who take part in our studies:

- Taking part in the study is entirely voluntary and refusal to participate will not affect any rights or benefits you normally have;
- You may or may not benefit from taking part in the study, but knowledge may be gained from your participation that may help others; and
- You may stop being in the study at any time without any penalty or losing any of the benefits you would have normally received.

The nature of the study, the benefits, risks, discomforts and other information about the study are discussed further below. If any new information is learned, at any time during the research, which might affect your participation in the study, we will tell you. We urge you to ask any questions you have about this study and we will explain it to you prior to agreeing to participate.

PRINCIPLE INVESTIGATOR

The investigator for this study is Amna AlMulla, a masters student at the Division of Sustainable Development, College of Science and Engineering at Hamad Bin Khalifa University.

<u>WHO CANNOT PARTICIPATE IN THIS STUDY?</u>

You cannot be in this study if any of the following apply to you:

- Dont live in Qatar (not a local)
- Below the age of 18
- Haven't graduated from high school
- You don't consider yourself as one of the following:
    - Entrepreneurs, potential entrepreneurs
    - Investors, potential investors

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Appendix D. Interview questions- Phase 2

Interview Questions- Phase 2
2021
Interview data:

1. Have you participated in phase 1?
2. Were you able to understand the main aim for the platform?
3. Is the platform easy to use?
4. Do you understand all the functionalities available and their purpose?
5. Does the platform need to highlight any of the features to make them clearer?
6. Does the application need any additional features to suit all stakeholders?
7. Any feedback or recommendations?

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.digbus.2022.100032.

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