Entrepreneurial ecosystem, gig economy practices and Women's entrepreneurship: the case of Lebanon

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Abstract

Purpose – The negative consequences of the COVID-19 pandemic and the current economic situation, especially in certain countries, have compelled organizations to shrink their hierarchies, reduce working hours, freeze hiring, and rely on gig workers to perform tasks. While these circumstances may be seen as a threat, certain vulnerable labor groups, such as women, seized the opportunity to develop entrepreneurial skills and launch their own firms. Others addressed smart platforms to engage in gig economy activities. This research investigates the aspects that drive women to be entrepreneurs, exploring the relationships between the entrepreneurial ecosystem, the gig economy, and women's entrepreneurship in a developing country.

Design/methodology/approach – Data were collected from 300 female entrepreneurs in Lebanon through questionnaires that measured the indicators and variables of the proposed model, which was tested applying partial least square.

Findings – The results show a positive influence of the entrepreneurial ecosystem and gig economy on women's entrepreneurship, stronger in the case of entrepreneurial ecosystem elements and almost similar for opportunity and necessity entrepreneurship.

Originality/value – This research achieves empirical evidence on the relationship between the entrepreneurial ecosystem, the gig economy, and women's entrepreneurship in the case of a developing country. The originality of this paper lies in its empirical and gendered approach, considering together the effects of entrepreneurial ecosystem factors and gig economy practices on women's entrepreneurship, especially relevant in a regional context like Lebanon, where digital economy may constitute an opportunity for economically vulnerable groups.

Keywords Entrepreneurial ecosystem, Women's entrepreneurship, Gig economy, Gig workers, Crisis, Start-ups, Small business

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Introduction

Ecosystems, in the management discipline, are understood as a complex collection of factors, actors, and players that are interrelated and organized in a way that encourages entrepreneurship and start-ups (Alvedalen and Boschma, 2017), constituting a challenge

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for academics and policymakers. Besides, entrepreneurship and self-employment are crucial to the creation of economic opportunities (Alvedalen and Boschma, 2017; Nylund and Cohen, 2017) and are feasible alternatives for employees who perceive internal and external inequity and who desire an alternative career path and a better quality of life (Simoes *et al.*, 2016). The gig economy also complements entrepreneurial ecosystems, progressively becoming an important aspect for understanding employment attitudes, freelancing, digital and online work, and technology management (Malik *et al.*, 2021). However, despite the growth of entrepreneurial ecosystem literature in recent years (Alvedalen and Boschma, 2017), considerable gaps still remain in its theoretical development.

These voids are mainly related to the lack of a holistic approach in previous entrepreneurial ecosystem models, which were focused on specific dimensions. Besides, previous models were quite descriptive, not analysing the causal relationships between ecosystem components (Alvedalen and Boschma, 2017; Isenberg, 2011), the determinants of the ecosystem's efficacy (Mack and Mayer, 2016), and the potential impacts of country culture (Audretsch and Belitski, 2017).

Furthermore, despite the considerable number of studies on entrepreneurship (Sallah and Caesar, 2020; Shin and Kim, 2020), less academic effort has been devoted to entrepreneurship in the case of certain vulnerable groups, such as women, and particularly in developing nations where the factors that encourage entrepreneurship may be unique (Simoes *et al.*, 2016). Underneath the focus on the gender factor, women's attempts to maintain the correct balance between paid job and home obligations and family caregiving are likely to be impacted significantly by their country's economic conditions and the overall culture. During periods of severe economic recession, when conventional salaries and wages jeopardize job options and the need for family income persists, the exploration of new business ideas and opportunities, the participation in gig economy practices, and becoming entrepreneurs may be feasible alternatives to paid work for women (Low and Weiler, 2012).

To better understand the phenomenon of women's entrepreneurship, especially in certain regions and cultural contexts, more exploration and evidence are necessary. From a regional perspective, there is a paucity of research on developing countries, in comparison with developed ones (Groth *et al.*, 2015; Neumeyer *et al.*, 2019), especially in the Arab region. This research line is just emerging in recent times in developing countries, although with a limited scope, mainly focused on literature reviews (Cao and Shi, 2021), and the analysis of women's entrepreneurship in specific economic sectors (Shankar *et al.*, 2020; Shil *et al.*, 2020). The few studies that address women's entrepreneurship in the Arab countries refer mostly to the barriers, especially educational and sociocultural (Mehtap *et al.*, 2017), as well as the challenges and determinants that foster women's intentions and embracement of entrepreneurial activities (Ali *et al.*, 2019; Khan, 2019), which are mostly determined by governmental programs, training, and societal and demographic factors. However, these factors do not provide a holistic picture of the entrepreneurial ecosystem, providing only a partial view of women's roles in such ecosystem. Moreover, women's practices in the gig economy are also underexplored. Consequently, the purpose of this study is to investigate the impact of entrepreneurial ecosystem characteristics and gig economy practices on women's entrepreneurship. This research was carried out in a developing country, and it aims at contributing to a deeper understanding of this phenomenon using a gendered approach, which will be valuable for policymakers in designing, developing, and implementing action plans to boost female entrepreneurial endeavours.

The rest of the paper is organized as follows: Section 2 focuses on previous relevant studies of the role of women in entrepreneurship and shows the theoretical framework to establish the hypotheses of the relationships between the entrepreneurial ecosystem and gig economy on women's entrepreneurship. The next section develops the research methodology,

detailing the case study, the data collection, and the measurement of the indicators. The last three sections show the results, discussion, and conclusions.

Literature review and theoretical framework

The role of women in entrepreneurship

Entrepreneurial activity and the creation of firms are crucial to promoting competitiveness and economic growth, considered as the most relevant growth catalysts in developing countries. Scholars and academics have defined entrepreneurship and entrepreneurs in various ways, each capturing their essence and character. Schumpeter's 1949 theory defined entrepreneurship as "the assumption of risk and responsibility in designing and implementing a business strategy or starting a business" (Hagedoorn, 1996). Entrepreneurship has also been described as "the catalytic agent in society that sets into motion new enterprises, new combinations of production and exchange" (Cuervo *et al.*, 2007).

Individuals often become entrepreneurs when they have no other way to make money, are unhappy with their jobs, lose them, don't get promoted, or face other career setbacks (Fairlie and Fossen, 2020). Those who start a small business out of necessity are known as necessity entrepreneurs. Other types of entrepreneurs include opportunity entrepreneurs, who launch a start-up firm when they spot a market opportunity or need (Short *et al.*, 2010).

When taking into account the gender aspect, since the 1980s, women have owned close to one-third of businesses globally (Lerner and Almor, 2002). Women's entrepreneurship has grown in prominence in recent years, as the rise of women entrepreneurs indicates. According to recent studies, women's entrepreneurship increased by about 10% between 2014 and 2016. In addition, the entrepreneurial gender gap has shrunk by 5% (Kelley *et al.*, 2017). As of 2016, 163 million women in 74 countries started their own businesses, while 111 million ran existing businesses. Accordingly, this phenomenon has attracted the attention of policymakers and scholars, constituting one of the most escalating categories of entrepreneurial literature globally (Langowitz and Minniti, 2007).

Research has emphasized women's contribution to entrepreneurial endeavours (Noguera *et al.*, 2013), along with economic development, in terms of job creation and GDP growth (Banerjee, 2019), reducing poverty and social isolation (Langowitz and Minniti, 2007). Women's entrepreneurship has shown to promote entrepreneurial diversity, offering opportunities for women's potential to be expressed and realized (Eddleston and Powell, 2008). However, and despite the growth in female entrepreneurship and its positive consequences, women are less likely than men to establish their own enterprises, and this inequality widens as the country's economic growth advances (Brush *et al.*, 2019), which emphasizes the idea of analysing women's entrepreneurship and the level of economic development together.

Women's entrepreneurship may be perceived as an important facet in developing countries that are experiencing economic challenges or failures, and which would benefit from an approachable and progressive attitude toward entrepreneurship and small business expansion and growth (Fergany, 2016). However, in these contexts, women's entrepreneurial ecosystems are often surrounded by a multitude of particular elements, which may have an influence on them. The persistent gender imbalance in entrepreneurial ventures and high-level professions highlights unequal resource distribution. Women have higher barriers to accessing resources, especially financial ones, required to establish their ventures (Brush and Cooper, 2012). In addition, the need for informal groups and networks is often dominated and controlled by men (Aidis *et al.*, 2008). Also, socioeconomic factors, such as poverty, educational attainment, and occupational status; and cultural factors, such as religion, norms, morals, and ethics, may exert an influence on entrepreneurship, especially for women (Zimmerman and Blythe, 2021).

Becoming an entrepreneur, especially for women, is a difficult process influenced by a variety of factors, frequently interrelated, which explains the suitability of using the ecosystem approach for its study.

Entrepreneurial ecosystem and women's entrepreneurship

The concept of ecosystems arose from organic and biological science and was popularized in business research and social science in the 1980s (Kilduff and Tsai, 2003), establishing itself as a key and definitive concept for entrepreneurship start-ups. Nowadays, a broadly applicable definition of this system describes it as a collection of actors, elements, or pillars that are interconnected, and arranged in a manner to facilitate entrepreneurship and start-ups.

Different scholars like Gnyawali and Fogel (1994), Isenberg (2011), Foster *et al.* (2013), and Feld (2020) have emphasized the relevance of some factors to configure what are recognized as entrepreneurial ecosystem models. Table 1, provided as supplementary material, summarizes the four entrepreneurial ecosystem models along with their components, basic notions, and principles. For example, Gnyawali and Fogel (1994) offered a theoretical framework to relate some of these components to different stages of the process of creating a new venture, like the phase of seeing the opportunity and the ability, propensity, and likelihood to enterprise. Isenberg (2011), besides highlighting some entrepreneurial ecosystem components, described entrepreneurship as a path for success that initiates with the development of capabilities and an entrepreneurial mindset, which are requirements for making entrepreneurial choices, launching startups, and achieving growth, success, and wealth. Foster *et al.* (2013) developed a descriptive study on the relative importance of entrepreneurial components and their comparison around the world. Finally, Feld (2020) described some of these components and classified them in terms of leaders and feeders. Therefore, previous models mostly applied a theoretical or descriptive approach, identifying the components of the entrepreneurial ecosystem, but they did not provide any empirical evidence of their real impact. Additionally, any of the previous models provided a holistic approach, considering all the components together.

Based on the insights provided in the literature, we developed an entrepreneurial ecosystem value chain model that integrates all actors and elements discussed by Gnyawali and Fogel (1994), Isenberg (2011), Foster *et al.* (2013), and Feld (2020), as depicted in Figure 1. This model provides a more holistic approach to entrepreneurial ecosystems, contributing to the understanding of the relationship between ecosystem factors and their outputs. This model is divided into four layers. In the "forward causation", these layers pinpoint "entrepreneurial activity leaders" and "entrepreneurial activity feeders", that foster "opportunistic and necessity entrepreneurial activity" leading to "aggregate social and economic value". This model also indicates how failed entrepreneurs' initiatives can feed new initiatives in the long term, as described in "backward causation".

Specifically, the forward causation determines how ecosystem elements result in outputs (entrepreneurial activity) and outcomes (social and economic value); while the backward causation points out how the ecosystem outputs and outcomes support new entrepreneurial initiatives and alter the entrepreneurial ecosystem and its elements over time.

The proposed entrepreneurial ecosystem value chain model stands out from other approaches because it provides a more holistic view, considering all its components together, and relating entrepreneurial ecosystem inputs (entrepreneurial activity leaders and feeders), outputs (entrepreneurial activity), and outcomes (social and economic value).

The proposed model is based on two types of elements, considered as inputs to the model, which act jointly in order to create outputs and outcomes. These elements can be classified as feeders and leaders. Entrepreneurial activity feeders are facilitators that stimulate the

Table 1.
Ecosystem models literature comparison

Ecosystem Elements	Gnyawali and Fogel (1994)	Isenberg (2011)	Foster *et al.* (2013)	Feld (2020)
Markets	*Not Applicable*	• Customers: Adopters to test the ideas; early feedback and distribution networks • Networks: Entrepreneurial and multinational corporate networks	• Domestic and foreign markets: Clients include the government and SME's	• Companies: The role of established organizations to create dedicated programs and departments to foster collaboration with fast growing start-ups
Human Capital and talent availability	• Business education and training, technical and vocational trainings on entrepreneurial topics, activities and skills	• Academic institutions: offering professional, vocational and academic trainings on entrepreneurial topics, activities and skills • Manpower: Skilled and unskilled labors; serial entrepreneurs	• Entrepreneurial experience • Technical, vocational and management skills and talents • Labor outsourcing and expatriates	• Talent Broad: Talented, experiences and multi skilled employees at all organizational levels
Academic institutions and Education	*Not Applicable*	*Not Applicable*	• Pre-and post-university educated workforce available. Large universities fostering entrepreneurship culture	• Universities: Providing startup talents; strong connection with community
Culture and Society	• Societal entrepreneurial spirit and diversity of economic activities	• Stories: Socialization of success stories, entrepreneurs' wealth and reputation • Society values and norms: Endurance for risk taking and failure	• Socialization of success stories, entrepreneurs' image, wealth and reputation • Research and innovational successful initiatives celebrations • Self-employment preference for youth and young	*Not Applicable*

(*continued*)

Table 1.

Ecosystem Elements	Gnyawali and Fogel (1994)	Isenberg (2011)	Foster *et al.* (2013)	Feld (2020)
Supporting Institutions Intermediaries and infrastructure	• Infrastructural support for small enterprises', R&D activities, as well as, availability of governmental assistance programs	• NGOs entrepreneurship initiatives, NGOs and associations support and competition programs • Infrastructure support, professions existence	• Counselors, coaches, mentors, accelerators and incubators availability • Availability of professional services providers, and connections to other business networks or partners • Availability of infrastructure and telecommunication network	• Intermediaries: Well respected visible and accessible counselors, coaches, mentors, accelerators and incubators availability • Support services: Accessible and integrated institutions providing wide scope of administrative and legal professional effective services at affordable price
Capital	• Venture capital access and availability, low-cost lending, alternative financial resources	• Venture capital access and availability, capital markets and micro credit lenders, availability of angel investors and/or family or friends' investors or creditors	• Venture risk capital and debit access and availability, availability of angel investors and/or family or friends' investors or creditors	• Capital strong: Venture capital access and availability, capital markets and micro credit lenders, availability of angel investors and/or family or friends' investors or creditors
Public policies	• Legislation, rules, policies and regulations that facilitates and encourages entrepreneurship	• Leadership: Unambiguous supports that is based on legality • Governmental and supportive regulatory system	• Governmental and supportive regulatory system, tax support	• Leadership: Strong visible and accessible entrepreneurial community devoted to making the region a terrific environment to start and develop a business • Governmental and supportive regulatory system; tax support; understanding of entrepreneurial activity and effect on economic growth

(*continued*)

Table 1.

Ecosystem Elements	Gnyawali and Fogel (1994)	Isenberg (2011)	Foster *et al.* (2013)	Feld (2020)
Engagement	*Not Applicable*	*Not Applicable*	*Not Applicable*	• Societal contribution to community • Numerous authentic and visible events that bring entrepreneurs and the community together, such as pitch days, boot camps, competitions and startup weekends
Network density	*Not Applicable*	*Not Applicable*	*Not Applicable*	• A strong, well-connected network of entrepreneurs and start-ups, as well as active and visible investors, consultants, mentors, and supporters. It's ideal if these individuals and organizations transcend industries, demography, and culture
Basic notions and principles	An integrative model of entrepreneurial environment is proposed, where government support impacts the opportunity to be an entrepreneur, while the ability and propensity to enterprise are impacted by entrepreneurial and business skills, and socio-economic factors respectively, explaining the likelihood to enterprise and create a new venture, thanks to financial and non-financial assistance	An entrepreneurship ecosystem strategy is proposed, where entrepreneurship is the core, and can be fostered by different domains classified as: markets, policy, finance, culture, supports and human capital. Entrepreneurship is described as path for success, that initiates with the development of basic capabilities, to form an entrepreneurial mindset, helping to make entrepreneurial choices, launching startups, and achieving growth, success and wealth	A descriptive study of the entrepreneurial framework is proposed, highlighting the entrepreneurial ecosystem pillars, their differences around the world as perceived by entrepreneurs, and their relative importance, stressing mostly the role of markets, human capital and funding	Participants of the startup communities are presented (including entrepreneurs, government, universities, investors, mentors, service providers and large companies), and classified as leaders and feeders

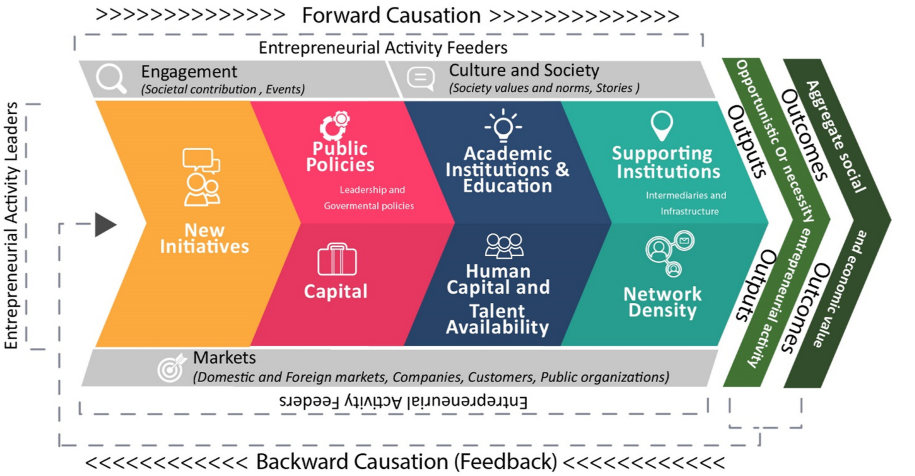

Figure 1.
Proposed ecosystem value chain model

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development of entrepreneurial endeavors, either by creating new businesses or innovating in existing ones. Entrepreneurial activity feeders in our model are: engagement (events), markets (early buyers, customers, domestic markets, foreign markets, and companies), and culture and society (society values, traditions, and norms). The engagement factor was introduced by Foster *et al.* (2013) as a feeder since entrepreneurial activity needs passion, commitment, proper communication, and self-efficacy, which can be lifted through authentic and visible events that bring entrepreneurs and the community together. Markets were presented by Isenberg (2011), Foster *et al.* (2013), and Feld (2020) and were considered as feeders since entrepreneurs trust in solid tactics and marketing strategies to foster growing startups. Finally, culture and society were presented by Gnyawali and Fogel (1994), Isenberg (2011), and Foster *et al.* (2013) and considered as feeders for the role of supporting cultures to overcome the barriers that frequently entrepreneurs face, particularly female entrepreneurs (Kalafatoglu and Mendoza, 2017). For instance, cultural aspects like endurance of risk-taking and failure, socialization of success stories, entrepreneurs' wealth and reputation, self-employment, work life balance, and self-esteem, can flourish entrepreneurial endeavors.

Entrepreneurial activity leaders can be defined as enablers and the heart of the entrepreneurial ecosystem value chain model, constituting the forces behind the entrepreneurship initiatives and the promoters that make it possible for entrepreneurs to emerge and flourish. Public policies, capital, academic institutions and education, human capital and talent availability, supporting institutions, and network density are classified as entrepreneurial activity leaders, as shown in Figure 1. First, public policies were considered essential for entrepreneurial ecosystems (Feld, 2020; Foster *et al.*, 2013; Gnyawali and Fogel, 1994; Isenberg, 2011). The existence of fair and supportive public policies, including legislation, rules, policies, and regulations, encourages entrepreneurial decisions (Castaño *et al.*, 2016), emphasizing the role of governments and policymakers as leaders in the entrepreneurial ecosystem. Second, access to and availability of capital play an essential role in fostering entrepreneurship (Rupasingha and Wang, 2017), including venture capital, capital markets, and microcredit lenders, angel investors, and family or friends' investors or

creditors as leader actors due to their relevance as sources of financial resources (Gutierrez and D'Mello, 2019). Third, academic institutions and education exert a relevant role fostering entrepreneurship (Feld, 2020; Foster *et al.*, 2013). Universities, for example, offer valuable resources to promote the entrepreneurial ecosystem, including not just entrepreneurship programs and research labs but also professors who act as co-founders, advisors and mentors, playing an essential role in crafting an entrepreneurial mindset in students, as the entrepreneurs of the future (Feld, 2020). Four, human capital and talent availability also foster entrepreneurship; talented and experienced individuals are an asset for successful entrepreneurship, providing skills, training, and experience valuable for successful new ventures (Kluve *et al.*, 2019). Five supporting institutions, including intermediaries and infrastructure, facilitate communication and research and development activities (Zhang and Li, 2010). Supporting institutions provide visible and accessible counsellors, coaches, and mentors who offer a wide scope of administrative and legal professional services, limiting the entry barriers that entrepreneurs face for launching new innovative initiatives (St-Jean and Audet, 2013). Finally, network density is determined by the existence of well-connected entrepreneurs, who form networks with advisors, mentors and sometimes investors (Feld, 2020). Network density eases the flow of information and provides counselling and mentoring, facilitating an effective and efficient allocation of human and financial capital, talents, and knowledge, which foster the generation of new and innovative ideas (Shu *et al.*, 2018).

Although the proposed value chain model is based on the most contemporary and widely shared models and may be convenient in general terms, the optimal entrepreneurial ecosystem that suits better entrepreneurial activity remains an open topic to be explored and discussed. Some differences can be expected depending on the features of the entrepreneurs and also depending on the context in which they pretend to develop their economic activity. These differences affect not only the factors that play a crucial role in fostering entrepreneurship but also their level of achievement, considering the type of entrepreneur and contingency elements. It is the case, for example, of vulnerable groups like women entrepreneurs, particularly in developing regions.

Women's entrepreneurs, especially in some cultures and regions, find an ecosystem surrounded by elements that hamper it (Alshebami and Alzain, 2022). These elements constitute barriers that can be observed across different aspects, both feeders and leaders. It is the case, for example, of the persisting disparity between men and women in high-level professions and entrepreneurial ventures, which stresses that resources are not being distributed fairly. Economic activity among women is likewise substantially lower than that of males, their median incomes also being significantly lower across all occupational categories (Chaaban, 2009). Women continue to make up the majority of the population who lack literacy in comparison with men, and in many institutional settings, they suffer serious limitations in accessing resources, including financial ones, essential for entrepreneurship (Brush and Cooper, 2012), being mostly men those better related to informal investors, like business angels for example (Aidis *et al.*, 2008). Finally, cultural aspects determine what is expected from women in society, linking their prospects to marriage and emphasizing the traditional role of women as care providers in their families, which imply high barriers for women to integrate in the labour market and explain that despite the recent growth of their entrepreneurial activities, they remain lower than those of their male counterparts (Kelley *et al.*, 2017).

However, even if women find mostly impediments across the elements of the entrepreneurial ecosystem, our arguments point out that an improvement in these elements and an especial consideration of the limitations that hamper women's entrepreneurship will imply their overcoming, leading to the growth of women's entrepreneurial initiatives. We will consider both feeders and leaders of the entrepreneurial ecosystem. As for the feeders, it is

expected that major engagement through events that integrate women entrepreneurs, solid marketing strategies that consolidate and enhance the markets reached by women entrepreneurs, and a change in society's values that overcome the cultural norms that limit women's entrepreneurship will act as facilitators to foster women's role as entrepreneurs. As for the leaders, it is also expected that supporting public policies and regulations to encourage economic participation of women and a major equality in their rights and economic conditions; the guarantee of a better access to capital and financial resources, including venture capital, capital markets and micro credit lenders, angel investors, etc.; the active enrolment of women in academic institutions and their participation in the creation of spin-offs; the improvement in their human capital and talent as a consequence of a more skilled education and an improvement in the literacies currently demanded by the labour market; and a major connection of women with supporting institutions and networks that provide them with the needed infrastructure, intermediaries, mentors, advisors and other well-connected entrepreneurs, will act as enablers that foster women's support to become entrepreneurs.

We will explore the effect of the entrepreneurial ecosystem value chain model, independently on whether a necessity or opportunity impulses women's business initiatives, and in a developing region where women's entrepreneurship can be considered especially relevant for the specific difficulties and economic challenges that these regions have, as well as the benefits that could be expected if different groups, not just men, are involved in launching new enterprises and business projects. Therefore, the following hypothesis are proposed:

H1. Entrepreneurial ecosystem value chain model and women's entrepreneurship activity are positively related in developing regions.

Considering the different reasons that lead to be an entrepreneur, we also propose:

H1A. Entrepreneurial ecosystem value chain model and necessity women's entrepreneurship are positively related in developing regions.

H1B. Entrepreneurial ecosystem value chain model and opportunity women's entrepreneurship are positively related in developing regions.

Gig economy and women's entrepreneurship

Commercial and social entrepreneurs recognize the value of knowledge as intangible capital for their start-ups and for stepping their foot into the digital work context by means of the gig economy (Scuotto *et al.*, 2022). The gig economy is defined as a free market system in which transient, flexible, temporary employment contracts are becoming more prevalent, whereas different businesses depend on freelancers and independent contractors (called "gig workers") instead of having full-time staff. The backbone of this economic system is technology. Web platforms and mobile apps are utilized to connect prospective customers (individuals or organizations) with service providers and contractors (gig workers), who get paid in exchange for providing services based on their skills and expertise. As a consequence, the gig economy could be seen as a continuum of traditional freelancing, but with considerable differences. In the digital era, the emergence and growth of business models based on smart platforms have generated opportunities and prospects for new work practices. The gig economy is increasingly likely to embrace non-traditional occupations, frequently taking advantage of new technologies, for improving individual welfare (Gleim *et al.*, 2019). In the same vein, the environmental conditions of the digital economy help the growth and development of the gig economy.

Based on the Knightian approach, in order to comprehend the potential effects of gig employment on entrepreneurial activity (Bewley, 2011), it is assumed that a person's choice

between entrepreneurship and full-time employment is influenced by the projected returns of these two alternatives. Professionals will choose the alternative with the greatest anticipated usefulness (Bewley, 2011). Notably, this argument does not necessarily mean that entrepreneurs would be compelled to play an active role in gig work, since the choice is dependent on expected earnings. As a result, the fundamental assumption driving the choice to enrol will be impacted by the possible benefits of being able to access gig work opportunities in the event of failure. It means that when gig economy choices are available as a backup plan, a potential entrepreneur has a stronger incentive to pursue entrepreneurship. Ad hoc employment provides low entry cost and flexibility and may result in more entrepreneurial activity as it permits diverse full and part-time employees to manage their time and working hours, aiming to obtain the resources needed, including expertise and cash, to establish their venture (Agrawal and Bellos, 2017). Furthermore, the availability of gig activities and opportunities may allow a potential entrepreneur to run a business that would not produce enough profits without the extra complementary gig activity. As a result, a potential entrepreneur should find the stability given by the continual availability of opportunities provided by the gig economy more appealing, particularly when there is a high level of ambiguity about the sustainability or longevity of their endeavour or when economic uncertainty and environmental complexity are high.

However, there is an opposite viewpoint on the impact of the gig economy on entrepreneurial activities. According to some researchers, unemployment and underemployment are important variables affecting entrepreneurial activity. Thus, as a result of their low opportunity costs, people may opt to engage in entrepreneurial activity (Fairlie and Fossen, 2020). In this context, the gig economy may reduce entrepreneurial activity by offering necessity entrepreneurs supplemental job options (Block and Koellinger, 2009).

Prior research has not particularly examined the relationship between women's entrepreneurship and the gig economy; however, similar assumptions about the link between gig economy practices and women's entrepreneurship might be applied to explain both phenomena, although with some differences in the strength of the association when comparing the two.

Given the challenges and complexities that women face in the job market and as entrepreneurs, the emergence of gig economy opportunities may be particularly relevant for women as they seek a better balance of their professional and personal lives. The impacts that could be expected between the gig economy and entrepreneurship initiatives in the case of women reflect the two options contemplated previously; on the one hand, the gig economy can be considered a complement to entrepreneurial activities, supporting and fostering them; and on the other hand, it can be considered a substitute, reducing them, in the case that women opt for being involved in the gig economy instead of becoming entrepreneurs. This kind of opportunity offered by gig the economy is particularly relevant to be analysed in developing regions, where the technology platforms that serve as the seed of the gig economy are completely installed and constitute an easy and fast way to obtain revenues by taking advantage of the flexibility afforded by the gig economy, particularly appreciated by women. Therefore, we propose the following open hypotheses:

H2. Gig economy and women's entrepreneurship activity could be positively or negatively related in developing regions.

Again, considering the different reasons that lead to be an entrepreneur, we also propose:

H2A. Gig economy and necessity women's entrepreneurship could be positively or negatively related in developing regions.

H2B. Gig economy and opportunity women's entrepreneurship could be positively or negatively related in developing regions.

Research methodology

The case of Lebanon

This study was carried out in Lebanon, a developing country that meets the conditions addressed by this study. Before the civil wars in the second half of the 20th century, Lebanon was known as the "Middle Eastern Switzerland". Nowadays, it is considered a developing economy with significant brain drain and over a million Syrian refugees compared to four million Lebanese citizens (Harris, 2014). The 1990 scenario is repeating itself in Lebanon, but with more critical and worsening facets. Besides the pandemic effects, the Lebanon economic crisis that erupted in October 2019 has forced local organizations to downsize the number of employees, decrease salaries, or reduce working hours. As the Lebanese pound has lost more than 97% of its value in comparison to the US dollar, the Lebanese government has removed subsidies on most of the market's products and services, affecting the purchasing power and well-being of Lebanese people. While many Lebanese considered the current situation a threat and decided to leave the country for good, others have reacted differently, considering the negative economic events as an opportunity to be entrepreneurs, feeling compelled to do that, or developing activities in the informal economy (Rossis, 2011).

The implications of this scenario are also similar for women. Lebanon is one of the few Arab countries that has permitted women to take on more responsibilities outside of the traditional mother-home roles. In Lebanon, women's educational enrolment has consistently increased, approaching 50% in postsecondary educational programs in both the private and public educational institutions, and over half in the case of university graduates (53% in 2001) (Haidar, 2018). As a consequence, although its number is still low, there are more Lebanese women highly established in all kinds of institutions in comparison with the majority of MENA countries, and the attitude towards women is less patriarchal (Tlaiss and Kauser, 2020), supporting the notion that women are gaining rights equal to men in different areas. Nevertheless, despite this positive evolution, there are still barriers and challenges that remain for its condition as a developing country and its cultural norms, which explain that there is still a long way of improvement, as evidenced by the low number of women in high-responsibility positions in private companies, as well as in the parliament or in politics in general, or the nonexistence of any quota scheme to solve this situation. This double facet of Lebanon, in the middle of a transformation, conserving still specific conditions determined by its culture and status as a developing country that limit women but with a mix of modernism that starts to positively influence women's involvement in economic activities, explains the suitability of Lebanon as a case study.

Data collection

Almost 95% of Lebanese registered organizations are classified as micro, small, or medium enterprises; those account for 50% of the national workforce. According to the World Bank Enterprise Survey published in 2019, 9.9% of these enterprises are co-owned by women (WorldBank, 2019). However, up until today, there were no clear official indicators on the number of organizations or start-ups.

Due to the lack of precise data on women's start-ups in particular, the population size necessary to determine the sample size in this research remains unknown. Given that, and because of the exploratory nature of this study, the sample-to-item ratio sample size technique was adopted to determine the required sample size. According to Hatcher and O'Rourke (2013), the minimal ratio to estimate each indicator presented in a model is 5 observations, which means that 5 observations are the minimum necessary to predict 1 indicator. Thus, for 56 indicators (those included in our model), at least 280 observations are needed to test the model effectively.

Additionally, to ensure consistency of the selected sample, we used an online sample size calculator in order to apply structural equational models. We determined standard parameters, like 0.3 as a medium effect size, 0.8 as the desired statistical power level, and a 0.05 probability level. Considering that our model includes 3 latent variables and 56 indicators, the minimum sample size required would be 119 responses. We circulated 460 questionnaires, being returned 300 valid questionnaires and 17 invalid or uncompleted responses that were excluded from the dataset, being the final response rate 65.21%.

To assure consistency and representativeness, probabilistic cluster sampling was adopted. Each Lebanese province was considered a cluster, homogeneously distributed. Lebanese provinces are characterized by communities that follow different norms, frequently determined by their clans, with women's rights and decision-making authorities differing from one province to another. According to the Global Entrepreneurship Report, which investigates entrepreneurial activity across the five main districts of Lebanon (GEM, 2017), early-stage entrepreneurial activity in Lebanon is distributed amongst all provinces. We followed the population numbers to determine the sample size within each province (CityPopulation, 2017). The sample distribution is shown in Table 2.

Female entrepreneurs were identified via secondary data sources, including Google searches, LinkedIn profiles, the Central Bank directory, and accelerators or incubators directors. In Lebanon, several incubators, accelerators, and mentors support and promote entrepreneurs. Accordingly, they were contacted in order to identify the Lebanon listings, namely the female entrepreneurs. These mainly included, "Berytech initiated by USJ University", "International Decorative Artisans League- IDAL" supported by the government, "Institute for Women's Studies in the Arab World", "Banque Internationale Arabe de Tunisie- BIAT" that is Co-Founded by the European Union, "Massachusetts Institute of Technology Enterprise Forum", "Speed Lebanon", "Injaz", "Lebanon for Entrepreneurs- LFE", "South Business Innovation Centre", "Institute for Women's Studies in the Arab World", "Lebanese League for Women in Business", "Lebanon Women Entrepreneurs", "The New Arab Women Forum Women Entrepreneurs", and "The American University of Beirut- AUB". Female entrepreneurs were contacted through face-to-face meetings, emails, or phone calls to explain the purpose of this research.

The research took place between February 2021 and January 2022. Collected data was imported into SPSS (version 23) to provide descriptive analysis and SMARTPLS (version 3.3.7) to run Partial Least Square.

Measurement of the indicators

Besides developing indicators that are based on the literature, we relied on the GEM report (GEM, 2017), which discussed factors influencing entrepreneurship to develop the ecosystem

Province	Population	GEM E'ship report %	% (rounded)	Sample size
Mount Lebanon	1,802,238	21.9	33	99
Beirut	433,249		8	24
Akkar	423,596	31.1	8	24
North Lebanon	790,951		15	45
Baalbek-Hermel	457,932	29.5	8	24
Beqaa	534,342		10	30
Nabatieh	383,839	17.4	7	21
South Lebanon	590,078	18.1	11	33
Total	5,416,225	100%	100%	300

Source(s): Authors' own creation

Table 2.
Sample selection

model and entrepreneurship measurement tool indicators (Naser *et al.*, 2012). With respect to the gig economy, measurement indicators were developed based on previous studies (Brown, 2009; Burtch *et al.*, 2018; Ravenelle, 2019).

The questionnaire entailed four main parts, including firstly an entrepreneurial profile and business information; secondly, ecosystem construct measuring statements (35 indicators); thirdly, opportunity and necessity entrepreneurship constructs (10 indicators); and fourthly, gig economy construct measurements (11 indicators). Questionnaires were composed of items with a Likert scale of 1–5 (strongly disagree to strongly agree) indicating the level of agreement.

To ensure privacy and reduce bias, the self-administered questionnaire method was adopted, where employees received the questionnaires via the Kobo-tool-box online tool and were asked to submit them within two weeks. Ethical issues were also taken into consideration, such as voluntary participation and withdrawal and the confidentiality of data, in addition to responding to any inquiries related to the research purpose and the questionnaire.

Initially, we conducted a pilot study with 30 participants to ensure the questions clarity and validity. Afterwards, the questionnaire was fine-tuned by having it translated into Arabic by an attested translator and rephrasing some statements that lacked clarity.

Results

We used Partial Least Square (PLS), adopting a two-stage approach to analyze second order constructs of ecosystem value chain and entrepreneurship (Hair *et al.*, 2016). The initial stage entailed regressing the lower-order (first-order) reflective nature constructs, along with the associated indicators, on their dependent constructs (i.e., entrepreneurship and ecosystem). This stage generated a separate indicator for each of the constructs. The second phase involved extracting and importing the regressed latent variables into a new dataset to serve as indicators for the (higher) second-order constructs for the purpose of analyzing hypotheses and estimating the model.

Wong (2013) stated that each of the construct's indicators loading, convergent and discriminant validity, and composite reliability shall be reported in reflective models. In theory, there are two views on indicators loading. According to Hulland (1999), to enhance the validity and reliability of the model, if an indicator load is less than the threshold of 0.5, it should be deleted. While Wong (2013) considered the indicator threshold to be 0.7. Internal consistency and reliability exist when the Cronbach's alpha and composite reliability of the construct meet the threshold (Wong, 2013). In addition, Average Variance Extracted (AVE) determines the convergent validity; the construct is considered valid when its value is equal to or higher than the threshold 0.5 (Fornell and Larcker, 1981; Wong, 2013).

Tables 3 and 4 represent independent and dependent variables, respectively. For each construct represented in the model, indicator loading, variance inflation factors (VIF), and t-values were estimated. Since the indicator loads for all model constructs exceeded 0.7, none of them were eliminated, which means that the indicators accurately represent their underlying constructs and the constructs are reliable. Additionally, the t-value showed that the indicators had strong internal consistency with regard to their constructs. Composite reliability and average variance extracted (AVE) values were also estimated for each construct in the first and second-order models to estimate the composite reliability. All of them exceeded the cutoff, showing model reliability and convergent validity, which means that the indicator variables loads are internally consistent with the underlying construct and that the indicators of one particular construct correlate with those of the same construct. Besides, the constructs pertaining to ecosystem leader elements have frequently higher loads than elements pertaining to ecosystem feeder elements, and R^2 is frequently higher for the

Construct	Indicator		Loading[a]	t-Value	VIF	R^2	F^2	CA[b]	rho_A	CR[c]	AVE[d]
Ecosystem value chain model	Capital	EcoFin1	0.790	33.25	1.96	0.71	2.49	0.86	0.86	0.85	0.59
		EcoFin2	0.817	45.65	2.06						
		EcoFin3	0.751	29.88	1.78						
		EcoFin4	0.775	31.70	1.79						
		EcoFin5	0.768	28.87	1.86						
		EcoFin6	0.728	19.03	1.61						
	Culture and Society	EcoCulSo1	0.767	26.89	1.76	0.605	1.53	0.82	0.82	0.87	0.58
		EcoCulSo2	0.713	17.10	1.60						
		EcoCulSo3	0.776	23.85	1.66						
		EcoCulSo4	0.762	23.49	1.79						
		EcoCulSo5	0.815	34.74	1.98						
	Supporting institutions	EcoSupp1	0.760	23.88	1.79	0.55	1.22	0.85	0.85	0.89	0.63
		EcoSupp2	0.784	28.48	1.96						
		EcoSupp3	0.826	43.38	2.05						
		EcoSupp4	0.819	38.33	2.34						
		EcoSupp5	0.784	25.01	1.81						
	Public Policies	EcoPubP1	0.777	31.52	1.82	0.60	1.54	0.85	0.85	0.89	0.63
		EcoPubP2	0.823	35.41	2.08						
		EcoPubP3	0.810	39.17	1.97						
		EcoPubP4	0.804	39.52	1.89						
		EcoPubP5	0.782	38.99	1.72						
	Human Capital	EcoHumanC1	0.801	34.29	1.74	0.62	1.69	0.82	0.83	0.88	0.66
		EcoHumanC2	0.847	46.53	2.03						
		EcoHumanC3	0.833	47.40	1.86						
		EcoHumanC4	0.773	24.20	1.57						
	Markets	EcoMarket1	0.802	23.44	1.58	0.50	1.01	0.75	0.76	0.86	0.67
		EcoMarket2	0.851	42.00	1.70						
		EcoMarket3	0.809	32.06	1.42						
	Education and Training	EcoEduTr1	0.859	45.89	1.84	0.52	1.12	0.81	0.81	0.88	0.72
		EcoEduTr2	0.892	65.89	2.13						
		EcoEduTr3	0.806	25.07	1.62						
	Network Density	EcoNetDiv1	0.895	62.32	1.52	0.47	0.89	0.73	0.74	0.88	0.79
		EcoNetDiv2	0.886	47.47	1.53						
	Engagement	EcoEng1	0.891	68.36	1.42	0.36	0.56	0.70	0.70	0.87	0.77
		EcoEng2	0.866	44.41	1.72						
	Second order					0.68	0.98	0.79	0.85	0.85	0.55

(*continued*)

Table 3.
Ecosystem value chain model and Gig economy first and second order research model measurement

Table 3.

Construct	Indicator		Loading[a]	t-Value	VIF	R^2	F^2	CA[b]	rho_A	CR[c]	AVE[d]
Gig Economy		GigEco1	0.717	19.16	1.79	0.12	0.02	0.91	0.92	0.89	0.54
		GigEco2	0.767	25.18	2.40						
		GigEco3	0.741	17.15	2.39						
		GigEco4	0.719	19.29	2.54						
		GigEco5	0.737	18.81	2.11						
		GigEco6	0.706	14.15	2.57						
		GigEco7	0.755	20.80	2.23						
		GigEco8	0.769	22.16	2.44						
		GigEco9	0.713	15.87	2.13						
		GigEco10	0.722	20.70	1.92						
		GigEco11	0.741	17.13	2.51						
		Second Order				0.12	0.02	0.91	0.92	0.89	0.54

Note(s): Factor loading >0.5 indicates indicator reliability (Hulland, 1999)
[b]CA: Cronbach's Alpha >0.7 indicates indicator reliability (Chin *et al.*, 2003)
[c] CR: Composite Reliability >0.7 (Bagozzi and Yi, 1988; Gefen *et al.* 2000)
[d] AVE: Average Variance extracted >0.5 indicated convergent validity (Fornell and Larcker, 1981; Wong, 2013)
Source(s): Authors' own creation

Construct	Indicator		Loading[a]	t-Value	VIF	R^2	F^2	CA[b]	rho_A	CR[c]	AVE[d]
Entrepreneurship	Opportunity E'ship	OppEnt1	0.744	21.91	1.75	0.75	3.01	0.81	0.82	0.87	0.57
		OppEnt2	0.802	36.277	1.92						
		OppEnt3	0.761	21.08	1.69						
		OppEnt4	0.772	25.82	2.04						
		OppEnt5	0.712	19.87	1.74						
	Necessity E'ship	NecEnt1	0.769	30.24	1.69	0.79	3.96	0.84	0.84	0.88	0.61
		NecEnt2	0.745	26.50	1.68						
		NecEnt3	0.822	35.61	1.96						
		NecEnt4	0.799	33.16	1.78						
		NecEnt5	0.777	26.27	1.80						
	Second Order					0.554	0.97	0.86	0.87	0.89	0.775

Note(s): [a] Factor loading >0.5 indicates indicator reliability (Hulland, 1999)
[b]CA: Cronbach's Alpha >0.7 indicates indicator reliability (Chin *et al.*, 2003)
[c] CR: Composite Reliability >0.7 (Bagozzi and Yi, 1988); Gefen *et al.* 2000)
[d] AVE: Average Variance extracted >0.5 indicated convergent validity (Fornell and Larcker, 1981; Wong, 2013)
Source(s): Authors' own creation

Table 4.
Entrepreneurship first and second order research model measurement

leaders, especially capital, public policies, and human capital, than for the feeders, with the only exception of culture and society.

The Fornell and Lacker criterion is a consistent method to determine discriminant validity. In this method, discriminant validity is achieved when the cross loadings of indicators pertaining to a construct load in its group higher than other model constructs, and the square of the AVE value of each construct must be greater across and less than other constructs (Fornell and Larcker, 1981). The model's discriminant validity is assured, as shown in Table 5, which means that the constructs across the model are not correlated and that the indicators are measuring the constructs that they were designed to measure.

Additional studies were undertaken to investigate the hypotheses, the model's predictive ability, as well as the goodness of fit (GoF), as presented in Figure 2. Hair *et al.* (2017) recommended performing 5000 bootstraps using PLS to confirm adequate findings. Running 5000 bootstraps, the model results indicated a medium variance proportion of the dependent variable (entrepreneurship) described by the independent variable (entrepreneurial ecosystem) having an $R^2 = 0.554$ and a low variance proportion described by the independent variable (gig economy), with an $R^2 = 0.12$ (Chin, 1998). According to Cohen's (1988) criterion, The F^2 of the ecosystem value came in at 0.98, showing a large effect of the ecosystem on entrepreneurship activity, while F^2 value of the gig economy came in at 0.14, demonstrating a small effect of the gig economy on entrepreneurship activity. Furthermore, the findings demonstrated a satisfactory prediction ability, with $Q^2 = 0.52 > 0$. Following Henseler and Sarstedt's (2013) criteria for the model GoF, our proposed model can be classified as a valid PLS global model on both the structural and measurement levels for fitting the criteria, GoF = 0.616 > 0.36.

H1 proposed a positive relationship between ecosystem and entrepreneurship. This hypothesis has been confirmed and accepted ($\beta = 0.704$; $p < 0.01$; $F^2 = 0.98$). In addition, H2 also indicated the existence of an effect between the gig economy and entrepreneurship, which resulted to be positive ($\beta = 0.08$; $p < 0.05$; $F^2 = 0.142$). The association between ecosystem and entrepreneurship is stronger than the influence of the gig economy on entrepreneurship, as evidenced by the β values.

With respect to sub hypotheses, H1A indicated a positive relationship between ecosystem and necessity entrepreneurship ($\beta = 0.63$; $p < 0.01$; $F^2 = 0.81$). Adding to this, H1B also indicated a positive relationship between ecosystem and opportunity entrepreneurship ($\beta = 0.61$; $p < 0.01$; $F^2 = 0.42$). Accordingly, ecosystem value chain has almost the same effect on opportunity and necessity entrepreneurial initiatives.

Moreover, H2A indicated a relationship between gig economy and necessity entrepreneurship ($\beta = 0.078$; $p < 0.05$; $F^2 = 0.013$), while H2B indicated a relationship between the gig economy and opportunity entrepreneurship ($\beta = 0.076$; $p < 0.05$; $F^2 = 0.025$). Thus, gig economy effect is positive in both cases, resulting in a higher rate of opportunity entrepreneurship than necessity entrepreneurship. Results are depicted in Table 6.

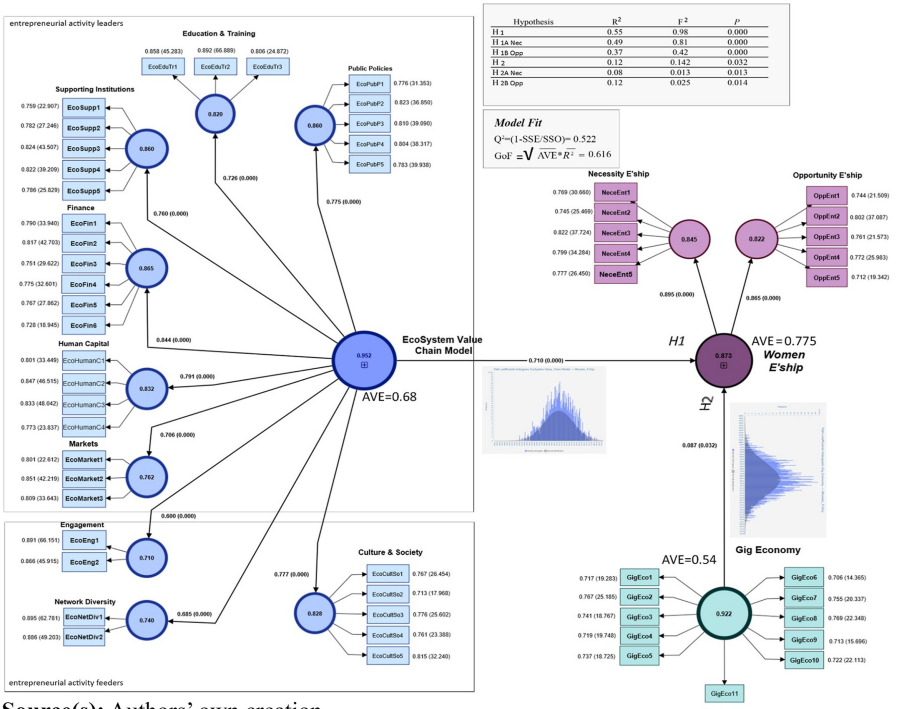
Discussion

This research aimed to empirically test how the entrepreneurial ecosystem and gig economy affect women's entrepreneurship. Despite vast entrepreneurial research (Sallah and Caesar, 2020; Shin and Kim, 2020), women's entrepreneurship, and particularly their role in the entrepreneurial ecosystem, as well as its relation to the gig economy, have received little attention (Simoes *et al.*, 2016). An attempt is being made to bridge this theoretical gap by developing a model of relationships that takes into account not only how necessity and opportunity women's entrepreneurship is impacted by leaders and feeders ecosystem actors, but also how it is impacted by the growth of the gig economy. The analysis of the impact of

	Factor	1	2	3	4	5	6	7	8	9	10	11	12	A	B	C
1	Culture and Society	0.77														
2	Education and training	0.46	0.85													
3	Engagement	0.40	0.43	0.88												
4	Capital	0.60	0.48	0.47	0.77											
5	Gig Economy	0.31	0.32	0.17	0.28	0.74										
6	Human Capital	0.53	0.53	0.44	0.64	0.32	0.81									
7	Markets	0.47	0.71	0.39	0.48	0.33	0.48	0.82								
8	Necessity E'ship	0.58	0.44	0.35	0.61	0.28	0.63	0.42	0.78							
9	Network density	0.45	0.73	0.36	0.44	0.29	0.48	0.71	0.41	0.89						
10	Opportunity E'ship	0.49	0.40	0.33	0.49	0.34	0.44	0.41	0.55	0.36	0.76					
11	Public policies	0.59	0.40	0.44	0.65	0.20	0.57	0.42	0.56	0.40	0.45	0.80				
12	Supporting Institutions	0.55	0.46	0.41	0.61	0.30	0.55	0.40	0.54	0.43	0.57	0.51	0.79			
A	Entrepreneurship						Second Order Model Discriminant Validity							0.88		
B	EcoSystem Value Chain Model													0.74	0.75	
C	Gig Economy													0.34	0.37	1

Note(s): The diagonal is the square root of the AVE of the latent variables and indicates the highest in any column or row
Source(s): Authors' own creation

Table 5.
Discriminant validity Fornell and Larcker criterion



Source(s): Authors' own creation

Figure 2.
Model results

Hypothesis	Std. β	STDEV	T-value	*P* values	Decision	F^2	5% CI LL	95% CI UL
H1	0.709	0.0302	23.42	0.00	Supported **	0.98	0.655	0.752
$H1A_{Nec}$	0.63	0.031	20.16	0.00	Supported **	0.819	0.579	0.679
$H1B_{Opp}$	0.61	0.02	20.68	0.00	Supported **	0.428	0.565	0.658
H2	0.087	0.039	2.207	0.032	Supported *	0.14	0.033	0.161
$H2A_{Nec}$	0.078	0.035	2.21	0.013	Supported *	0.013	0.029	0.1425
$H2B_{Opp}$	0.076	0.034	2.18	0.025	Supported *	0.025	0.028	0.1423

Note(s): **$p < 0.01$; *$p < 0.05$ at Two tailed test with 0.05 Sig. Level
Source(s): Authors' own creation

Table 6.
Hypothesis results

both, together with the gendered and regional approach of this research, support its value, novelty, and contribution.

The proposed hypotheses put forth in this study are that, given the unique challenges women face in starting their own businesses and navigating the labor market, the existence of an appropriate entrepreneurial ecosystem and the chance to participate in the gig economy impact female entrepreneurs. These elements can help them get just beyond the obstacles they typically encounter to create and grow their businesses, which could be particularly strong in the case of developing countries.

The empirical results showed a positive influence of both the ecosystem value chain model and the gig economy on necessity and opportunity entrepreneurship, although the value

chain ecosystem exerted a higher effect on women's entrepreneurship than gig economy practices. These results provide empirical evidence on the relevance of the different dimensions of the entrepreneurial ecosystem to foster entrepreneurship, considering both opportunity and necessity entrepreneurship, especially the dimensions related to finance or capital, human resources, and public policies. This finding stressed the importance of the leaders in the proposed value chain model, and agreed with some previous research that supported the role of these leaders to maintain a healthy entrepreneurial ecosystem environment, emphasizing the positive role of fair and supportive public policies that include legislation, rules, and regulations for encouraging entrepreneurial decisions (Castaño *et al.*, 2016). Similarly, and in line with previous studies (Gutierrez and D'Mello, 2019), the access to and availability of capital, including human capital but also funding from different sources (venture capital, capital markets, microcredit lenders, etc.), have been proved essential for fostering entrepreneurial activities. The positive influence of these factors for opportunity and necessity entrepreneurship had been claimed in general terms, but our research has proved their relevance also to foster female entrepreneurship in a developing country, being these dimensions for leading entrepreneurial activities crucial for overcoming the barriers and limitations that women may face to be entrepreneurs in these contexts.

Regarding the influence of the gig economy, our findings pointed out that its influence was lower than that exerted by the entrepreneurial ecosystem, even though it was positive and significant. It means that the existence of gig economy opportunities acts as a backup plan for potential entrepreneurs and also as a supplement for entrepreneurs who run businesses that are perhaps not profitable enough (Agrawal and Bellos, 2017). Therefore, our results support this vision also in the case of female entrepreneurs in developing countries, who present a strong need for incomes to support their familiar economies and who will not see entrepreneurship and their participation in gig economy practices as exclusionary options but as choices that may coexist to assure these incomes.

Conclusion

This research encompasses relevant implications from a theoretical and practical perspective. From a theoretical point of view, we propose a new model that combines previous entrepreneurial ecosystem models into a more holistic framework of relationships. It differs from other models, which mostly focus on specific dimensions while neglecting others, like the role of markets, not included by Gnyawali and Fogel (1994), academic institutions and education, not contemplated in the models of Gnyawali and Fogel (1994) and Isenberg (2011), engagement, not included by Gnyawali and Fogel (1994), Isenberg (2011) and Foster *et al.* (2013), or culture and society, not contemplated by Feld (2020). Previous models were sometimes vague and descriptive, with an unclear ecosystem actor's role in resulting entrepreneurial activity. In our model, the country or regional conditions (Isenberg, 2011) are also emphasized, analyzing if women entrepreneurs considered to become entrepreneurs an easy decision, if it reflected a desirable career path, and the role of their families on that, as well as their conditions and commitment, as a reflection of specific cultural aspects, and as an antecedent to examining the entrepreneurial ecosystem.

From a practical point of view, our results set a foundation that could guide the actions of different groups to encourage women to start their own businesses. Here below, we discuss some points that can be addressed to support entrepreneurship based on our proposed model. Firstly, in the current economic situation, the Lebanese government should take the initiative and support women entrepreneurs in their start-ups by reducing taxes and facilitating market entry regulations, which would contribute to avoiding the massive migration that is affecting the country. Secondly, previous studies indicated the poor business orientation of Lebanese people, showing that the majority of Lebanese may use a microcredit for personal

things, while only 29.79% would take a loan to improve their business (Mouazen and Hernandez-Lara, 2020). Stakeholders, supporting institutions, academic institutions, networks, and governments ought to address this issue and increase awareness about money investment, risk acceptance, and entrepreneurial attitudes. Adding to this, the banking sector should offer several types of loans with low interest rates to support entrepreneurship, including special lines for women. Thirdly, although the educational institutions in Lebanon are well developed, some improvements are needed nowadays in collaboration with different stakeholders, like fostering entrepreneurship programs, promoting enterprise culture, and developing entrepreneurial competencies within the higher education system. Such practices will flourish human capital and talent availability, also for women, as far as they take part in these initiatives. Fourthly, entrepreneurship development centers should be set up by academic institutions, legal professionals, coaches, mentors, accelerators, incubators, banks, and microfinance institutions in an effort to foster the growth of entrepreneurship by providing practical training and experience for women who are aiming to establish their start-ups. Building these networks will foster knowledge transfer and create a solid base of knowledge and experience for current and future female entrepreneurs. Fifthly, some changes need to be made at a cultural level, including promoting the entrepreneurs' image as a desirable career path for women and overcoming stereotypes related to women's role in economy and society, mostly linked to their role and status within families. Finally, even if the influence of gig economy practices on entrepreneurship was low, our results suggest the suitability of fostering these practices as well as the extensive use of the internet in order to promote flexible works based on technology applications that can serve as a backup plan and as a complement to entrepreneurs.

However, even if it would be interesting to analyze the particular effect of the entrepreneurial ecosystem and the gig economy on entrepreneurship considering gender differences, the design of this study was not appropriate to demonstrate that, and therefore the differences about how this model works in general terms or when the gender dimension is involved could not be tested. In the future, it would be advisable to include new variables to achieve a more comprehensive entrepreneurial ecosystem model that provides a more complete and advanced approach, as well as to examine the applicability of the model by comparing the entrepreneurial activities of men and women, and exploring the differences when the gender dimension is excluded. There would be interesting also to compare the applicability of the model in developed and developing countries. These comparisons would provide a more exhaustive knowledge on women's entrepreneurship.

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