THE WOMEN'S ENTREPRENEURIAL ECOSYSTEM IN TUNISIA: HOW CAN ENTREPRENEURIAL SKILLS OVERCOME OBSTACLES?

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ABSTRACT

Background: Over the last decade, the definition of 'entrepreneurial ecosystems' has acquired great importance in research processes related to the management and business field. In this sense, the term has been used in numerous documents of diverse nature to describe the interaction of political, social, economic, cultural, and environmental aspects that enable the development of entrepreneurial activity in a given region. Female entrepreneurship represents untapped economic potential and assets in Tunisia. Nevertheless, women are likely to be disadvantaged in their entrepreneurial journey due to many difficulties they face that have been exacerbated by and even before the COVID-19 crisis. To unlock the value that women can bring to the economy, society, themselves, and their families, it is necessary to cultivate an entrepreneurial ecosystem that encourages and supports female entrepreneurship in general.
Purpose: This research article examines how entrepreneurial skills represent significant resources for overcoming the barriers inherent in women's entrepreneurial ecosystem.
Design/methodology/approach: In addition, it tests the mediating effects of emotional intelligence and their impact on the relationship.
Findings/Result: Focusing on a population of 60 young women entrepreneurs in Tunisia, the results of our study show that entrepreneurial skills play a primordial role in women entrepreneurs overcoming ecosystem barriers.
Conclusion: The outcomes of this research indicate that entrepreneurial skills are essential for women to succeed in the entrepreneurial ecosystem. Furthermore, the study suggests that emotional intelligence has a beneficial impact.
Originality/value (State of the art): The added value of this research is that it explores how entrepreneurial skills influence the obstacles within the entrepreneurial ecosystem, with emotional intelligence playing a mediating role.

Keywords: entrepreneurial ecosystem, women entrepreneurs, entrepreneurial skills, obstacles, emotional intelligence

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INTRODUCTION

In recent decades, entrepreneurship has become a social and knowledge strategy for the skills that enable economically active populations to carry out entrepreneurial projects for self-employment with a greater degree of certainty and opportunity to achieve a better life quality. Most countries have recognized the need to implement a competitive and dynamic entrepreneurial economy. However, they didn't succeed in achieving progress due to the lack of an entrepreneurial ecosystem, vague entrepreneurship policies, and a lack of knowledge on how to respond to the emergence of an entrepreneurial society.

Despite the considerable efforts to develop entrepreneurship, small and medium-sized enterprises (SMEs) did not develop adequately and sustainably in Tunisia. In the Tunisian context, international foundations have drawn up several studies on the entrepreneurial ecosystem. In its report on Tunisia, the Global Entrepreneurship Monitor (GEM) announced the results of the "Global Report 2022/2023". The findings showed that Total entrepreneurial activity in the start-up phase (TEA) is equal to 17%. Indeed, the majority of entrepreneurs were obliged to start their new businesses due to the lack of employment. Necessity entrepreneurship has increased in Tunisia, as in many other countries, during this period of turbulence following the health crisis. The rate of ownership of established businesses is around 10%. However, the rate of exit with cessation of activity is approximately 7%. This reveals the great difficulties faced by entrepreneurs in surviving. The gender gap exists and it is highlighted by the different levels of entrepreneurial activity. In addition, entrepreneurial activities, dominated by the consumer-oriented sector, have had little impact on job creation, innovation, competitiveness, and sustainable development objectives because they are characterized by low financial and human resources. The experts' rating of the national conditions for entrepreneurship in Tunisia was negative. They devalued all the statements describing the framework conditions for entrepreneurship. In addition, the 2018 study done by the SALEEM-Tunisia project recommended the creation of an official national student-entrepreneur scheme and the setting up of two student-entrepreneur support centers. The latter aims at identifying the shortcomings hindering the entrepreneurial development and employment of young graduates. As a part of this project, two surveys were carried out among students and players in the entrepreneurial ecosystem

(in the cities of Sfax and Tunis-Carthage). The results revealed several shortcomings in university training (rigidity of courses and timetables, lack of time, shortage of skills, and deficiency of quality) and the entrepreneurial environment and support practices (cross-fertilization of services, and lack of complementarity between structures, limited networking, lack of communication between the various players, difficulty of access to reliable information and cumbersome and slow administrative procedures).

Tansley introduced the term "ecosystem" in 1935. He defined it as a set of organisms interacting with the physical environment in a given space, emphasizing its fundamental role in nature. Dubini (1989) extended this concept to businesses, describing an environment characterized by family businesses, a diverse economy, solid infrastructure, investment capital availability, a supportive culture, and public policies encouraging business creation (cited in Spigel, 2015). De los Santos (2017) defined an ecosystem as a system where public and private actors interact systematically.

In the 21st century, the concept of "entrepreneurial ecosystem" emerged. It emphasized the interaction between businesses and the region to foster innovation (Boutillier, Levratto & Carré, 2015). It comprises cultural, social, and physical elements (Spigel, 2017). The entrepreneurial ecosystem involves various actors and factors fostering high-growth businesses (Stam and Van de Ven, 2021). They not only create but also sustain and develop businesses (Pereira et al. 2020).

Attributes of entrepreneurial ecosystems include cultural attitudes, social networks, capital investment, infrastructure, universities, and policies (Theodoraki & Messeghem, 2017). Brown and Mason (2017) classify ecosystem aspects into actors, resource providers, connectors, and entrepreneurial culture. Feld (2012) identifies leadership, intermediaries, network density, governance, skills pool, support services, commitment, interaction with large firms, and access to capital as key attributes.

Theoretically speaking, the entrepreneurial ecosystem offers equal opportunities for success to all participants. However, in practice, women face social and resource access disparities compared to men (Brush et al. 2018). This gender gap underscores the need to address barriers arising from discriminatory norms, limited support structures, and finance accessibility challenges (Brière et al. 2017).

Despite recent recognition of entrepreneurship as gender-influenced and linked to social change, gender-specific contexts are often overlooked in entrepreneurial strategies (Calas et al. 2009). Family support emerges as crucial for women entrepreneurs as it impacts their availability and satisfaction with their businesses (Brière et al. 2017; Chasserio et al. 2014).

Studies suggest that women entrepreneurs thrive in ecosystems with low entry barriers, supportive policies, and legal frameworks (Hechavarría & Ingram, 2018; Sperber & Linder, 2019). Community support, including family, friends, and colleagues, significantly influences women entrepreneurs' business creation process (Bullough et al. 2014). However, women often face challenges accessing finance and other forms of support, limiting their success (Hassine, 2016).

While entrepreneurship is increasingly common among women in developing countries, they receive less support from entrepreneurial ecosystems compared to men (OECD, 2021; Brush et al. 2019). Policies often overlook gender-specific issues, rendering them ineffective (OECD, 2021). Women's entrepreneurship success depends on personal attributes and environmental factors, including social, political, and cultural institutions (Aidis & Weeks, 2016).

Key factors supporting entrepreneurial ecosystems include networks, academic institutions, government policies, support organizations, funding platforms, and skilled human resources (Cohen, 2006; Isenberg, 2011). Women entrepreneurs face challenges in balancing work and family life which are influencing various aspects of their businesses (Powell & Mainero, 1992; Jennings & McDougald, 2007; Kirkwood & Tootell, 2008).

The digital economy offers significant opportunities for women entrepreneurs as it enables them to have increased participation in public affairs and access to information (Antonio & Tuffley, 2014; Hilbert, 2011; Gurumurthy et al. 2006). However, some argue that women face intrinsic disadvantages in benefiting from the digital revolution due to technology adoption barriers and lack of adaptation to their needs (Rogers & Makonnen, 2003).

Incubators play a vital role in the entrepreneurial ecosystem by supporting entrepreneurs and facilitating business creation (Cooper, 1985). They come in various types, such as economic development, technology, academic, social, and private incubators. Each is serving specific purposes (Von Zedtwitz & Grimaldi, 2006). The impact of information and communication technologies (ICT) on business performance varies with greater benefits observed in more developed countries (Dell'Anno & Solomon, 2014). However, ICT adoption has contributed to greater access to opportunities, especially for women and minorities (Friedman, 2005; Niebel, 2018).

The concept of entrepreneurship has evolved over centuries, referring to the driving force behind initiating one's business endeavours (Julien, 1999; Christophe, 2008). Traditionally, entrepreneurs were characterized by providing capital, organizing businesses, and innovating to meet market demands, stimulating economic development (Koubaa, 2017). Ambidexterity, originally a business strategy, is now extending to innovation, organizational adaptation, and management (Koubaa, 2017).

Entrepreneurs play a crucial role in applying ambidexterity, balancing exploration and exploitation of opportunities (Smith et al. 2005; Waagner et al. 2010). Opportunity exploration involves innovation, seeking new markets, and establishing relationships, while exploitation focuses on refining existing opportunities (March, 1991). Entrepreneurs require diverse skills, including entrepreneurial, managerial, and technical-functional abilities (Chandler & Jansen, 1992). Women entrepreneurs face challenges in acquiring these skills, with two main approaches explaining their success: the personality trait and behaviourist approaches (Fayolle, 2005). The personality trait approach emphasizes individual traits. Whereas, the behaviourist approach focuses on actions and skills (Verstraete & Saporta, 2006).

Skills are crucial in predicting entrepreneurial performance, with competencies representing the ability to carry out tasks acquired through training or experience (Loué & Baronet, 2011). Entrepreneurial skills encompass abilities and knowledge essential for initiating and managing business projects effectively (Pettersen & Jacob). Identifying these skills is pertinent to promoting women entrepreneurs' success.

According to Bardzil & Slaski (2003), emotional intelligence (EI) refers to the capacity to recognize and manage one's own emotions and others' emotions to facilitate relationships and emotional regulation.

For Pradhan & Nath (2012); Zampetakis et al. (2012) studies have demonstrated a significant correlation between emotional intelligence and entrepreneurial behaviour. This correlation influences various aspects of the entrepreneurial process (Ahmetoglu et al. 2011; FakhrEldin, 2017; Mortan et al. 2014).

Successful entrepreneurs often exhibit high levels of emotional intelligence, including traits like teamwork, autonomy, stress management, and self-confidence (Rhee & White, 2007; Boren, 2010; McLaughlin, 2012). Emotional intelligence is considered essential in promoting teamwork, creativity, and innovation within companies (Goleman, 2006).

EI encompasses skills that enable individuals to understand and manage emotions effectively, thereby guiding their thoughts and behaviours (Bar-on, 1997; Goleman, 2006). Two main approaches define emotional intelligence: EI-literacy focuses on reasoning about emotions, and EI-trait considers it as a broader concept including personality traits, affects, and perceived abilities (Joseph et al. 2015). In 2006, Goleman identified five core components of emotional intelligence: self-awareness, self-regulation, motivation, empathy, and social competence.

Consequently, the current research aims to shed light on the impact of entrepreneurial skills on the challenges of the entrepreneurial ecosystem with the mediation of emotional intelligence. The objective is to extend prior research in the Tunisian context. By addressing this issue, this study aims to examine the ecosystem challenges, entrepreneurial competencies, and emotional intelligence among women entrepreneurs in Tunisia

METHODS

Firstly, a bibliographic search was carried out to make it possible to identify more including scientific articles which made direct reference to female entrepreneurship ecosystems in Tunisia. Subsequently, a tracking strategy was implemented using the following keywords: entrepreneurship ecosystems, entrepreneurial skills, female entrepreneurship and emotional intelligence.

The main research questions are how can entrepreneurial skills help to overcome the challenges of the entrepreneurial ecosystem in Tunisia? What role can emotional intelligence play in improving the relationship between entrepreneurial skills and the challenges of the ecosystem? What are the challenges facing women entrepreneurs in this ecosystem and how can they overcome them? What are the entrepreneurial skills that women entrepreneurs need to succeed in this ecosystem? Our sample defines the population covered by the survey. Our sample is limited to women entrepreneurs in Tunisia. Thus, in this study, we first designed the questionnaire to collect data. Our research is based on a sample of 60 women from the region of Sfax, Tunisia (the second-largest city in Tunisia).

To explain the relationship between ecosystem challenges and entrepreneurial skills as well as the moderating effects of emotional intelligence. We will follow a hypothetico-deductive approach in our research. Indeed, after reviewing the literature, a field study was conducted to empirically verify the effects that the different variables may have. In this case, a questionnaire survey was conducted. We define the study variables as follows. We drew on the work of Tromsø (Silvera et al. 2001), Elmuti, Khoury & Omran (2012), and Bar-On (1997), Isenberg (2011) and Goleman (2006). These items were used in all measurement scales. Responses were assessed on a 5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree.

The relationship between the challenges of the entrepreneurial ecosystem and women's entrepreneurial skills can be explained as follows: Women's entrepreneurial skills may be influenced by the challenges of the entrepreneurial ecosystem in which they operate and by the effects of emotional intelligence as a moderating variable. The entrepreneurial ecosystem refers to the environment in which entrepreneurs operate, including the institutions, policies, resources, and networks available to support business development.

The entrepreneurial ecosystem challenge refers to the obstacles and problems that entrepreneurs face when seeking to create and to develop a business. These include difficulties in accessing finance, finding talent, regulation, competition, innovation, risk management, and other factors that can hinder the growth and success of a business. Entrepreneurial ecosystems aim at creating a favourable environment where entrepreneurs can thrive by overcoming these challenges through support measures such as incubation programmes, coaching resources, professional networks and

entrepreneur-friendly policies. This relationship could include women's entrepreneurial skills, which can be measured by indicators such as the ability to innovate, to take risks, to solve problems, to mobilise resources and to plan and to manage a business. The measurement items were assessed by the questionnaire based on the work of Tromsø (Silvera et al. 2001), Elmuti, Khoury & Omran (2012), and Bar-On (1997).

Subsequently, the dependent variables could include different aspects of the entrepreneurial ecosystem, such as the availability of financial resources, access to professional networks, institutional support, policies favourable to female entrepreneurship, work-family conflict and family responsibilities, computer technology and bureaucracy. The research dimensions were assessed using a standard questionnaire based on the work of Isenberg (2011). The dimensions of emotional intelligence (self-awareness, emotion management, motivation, empathy, and social competence) were assessed using Goleman's (2006) standard mixed-model questionnaire.

Finally, the data was analysed using the following method. The study used Smart PLS software to analyse a structural equation model (SEM) on the influence of entrepreneurial skills and emotional intelligence on the challenges faced by entrepreneurs within an ecosystem. Several steps were taken to evaluate this model. First, internal reliability was examined using Cronbach's alpha coefficient to assess the consistency of the items measuring each construct. Next, convergent validity was assessed by analysing the factor loadings of the indicators on their respective constructs. Discriminant validity was also checked using the Fornell-Lacker criterion and by comparing the values of the AVE (Average Variance Extracted).

In the second stage, the structural model was evaluated. This involved checking the predictive relevance of the model by examining the coefficient of determination (R^2). The fit of the model was assessed using the Goodness-of-Fit (GoF) index to ensure that it matched the observed data. The strength of the relationship between the variables was measured using Cohen's f^2. The presence of multicollinearity was also checked by examining tolerance and the VIF (Variance Inflation Factor).

In the end, a mediation analysis was conducted to study the direct and indirect effects of entrepreneurial skills and emotional intelligence on entrepreneurial challenges. Direct effects were examined through path coefficients, t-statistics, and p-values. Indirect effects were assessed using the bootstrap method of Preacher and Hayes as well as confidence intervals. To carry out these analyses, various techniques such as t-tests and confidence intervals were used in addition to the SmartPLS software and the PLS-SEM approach. This overall assessment verified the validity and robustness of the model as a whole by providing important information about the relationships between the studied variables.

Hypothesis

Using a systematic and selected approach in order to be analysed in depth, a certain number of conceptual approaches were reviewed to broaden the matter's study in order to approach it from different angles. Thus, we have as an objective to better understand this term which is gaining relevance in the contemporary literature of management sciences.

The concept of entrepreneurship ecosystem has become a reference in the literature on business, entrepreneurship, and economic development to explain the interaction of political, social, economic, cultural and environmental aspects that enable entrepreneurship development in a given region. According to Spigel (2017), linking entrepreneurship ecosystem theories with concepts related to clusters, regional innovation systems, and networks identifies ten cultural, social, and material attributes in ecosystems, namely: supportive culture, entrepreneurial and talent histories of workers, risk capital, networks, mentors and role models, policy and governance, universities, support services, physical infrastructure, and open markets. Spigel & de Vinodrai (2020) suggest that entrepreneurship ecosystems are the conjunction of actors and factors in a region that contributes to the gradual creation and survival of new high-impact businesses.

The entrepreneurial competencies approach replaces the study of personality traits and follows previous work on the competencies developed in entrepreneurship (Brinckmann & Kim, 2015). Entrepreneurial competencies are defined as a "set" of values, knowledge, motivations, personality traits, attitudes and skills needed to successfully create a business (Kyndt & Baert, 2015; Volery et al. 2015). Indeed, Hosseininia et al. (2017) assert that the lack of entrepreneurial skills

is a challenge for the development of entrepreneurship. Thus, Tabatabaei et al. (2015) argue that psychological components such as emotional intelligence contribute to the entrepreneurial process. People with higher emotional intelligence are more likely to be entrepreneurs as they can cope with negative and upsetting emotions, as well as stress caused by work and the environment when starting and managing a new business (Kong & Zhao, 2013). A review of the literature has shown that individuals' entrepreneurial skills can help overcome entrepreneurial ecosystem challenges. In other words, components of the entrepreneurial ecosystem challenges, which are the availability of financial resources, access to professional networks, institutional support, favorable policies for female entrepreneurship, work-family conflict and family responsibilities, computer technology and bureaucracy must be overcome. On the other hand, certain elements of entrepreneurial skills, such as technical, business management, and personal entrepreneurial skills can overcome these barriers. Previous research has shown that the emotional intelligence factor is a concept that refers to the person's ability to perceive, understand, manage, and effectively use emotions. Accordingly, the research conceptual framework was developed as shown in Figure 1, and the research hypotheses are as follows. the first hypothesis is that Entrepreneurial skills have a significant impact on the challenges of entrepreneurial ecosystems. The second hypothesis is that Emotional intelligence can improve the relationship between entrepreneurial skills and ecosystem challenge.

RESULTS

Evaluation of the Measurement Model

To assess the quality of the measurement model and to test the research hypotheses, we used the "PLS-SEM" method and other appropriate measurement tests. The PLS approach is a statistical method for modeling the complex relationships between observed variables, known as manifest variables, and latent variables. Using this method, we can test the hypotheses expressed in the literature review and, based on this test, we provide a favorable assessment for interpreting the results of our empirical study. The evaluation of the measurement model in reflexive mode is based initially on an assessment of the reliability of internal consistency, followed by an assessment of the convergent validity of the measures associated

with the constructs and discriminant validity. In fact, validity is assessed by examining two types of validity: convergent validity of the measures and discriminant validity. Discriminant validity represents the extent to which the measures of one construct differ from the measures of another construct in the model. In the PLS approach, the mean variance and the shared variance between the construct and other constructs in the model are compared to assess discriminant validity. In practice, the AVE (Average Variance Extracted) of each latent variable must be greater than the square of the correlation between this latent variable and the others (Tenhenhaus et al. 2005). The AVE must be greater than or equal to 0.5 (Chin, 1998). Tables 1, 2, 3, and 4 present respectively: the different indicators used, their thresholds, and their interpretations, analysis of internal reliability, convergent validity of manifest variables, and correlation and discriminant validity.

The evaluation of the external model leads to the following conclusions: Cronbach's Alpha and Dillon Goldstein's Rho are good for all scales; the first eigenvalue is greater than 1; Composite reliability is always greater than 0; AVEs are always greater than 0.5; The AVE of each variable is stronger than the squared correlations of all the other VLs

Evaluation of the Structural Model

In the PLS method, there are three levels of validation: the quality of the external model, the quality of the internal model, and the quality of each structural regression equation. To measure the overall quality of the model, Tenenhaus et al. (2005) recommend using the GoF (goodness of fit), which is an overall criterion for model fit. The GoF is the geometric mean of the mean communality and the mean R^2.
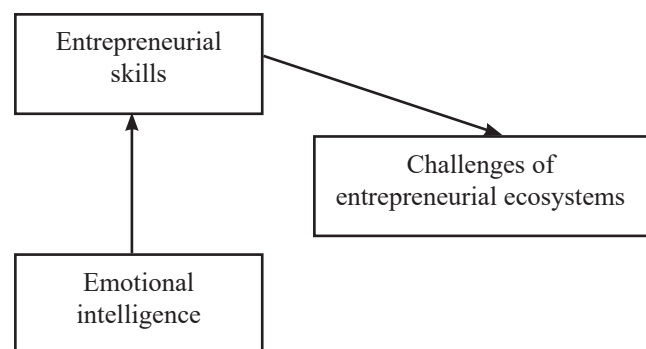

Figure 1. Research conceptual framework was developed

Table 1. The different indicators used, their thresholds, and their interpretations

Discriminant validity	AVE Fornel-Lacker (MRAb and others, 2017	IF >0.5 good discriminant validity and if < 0.5 poor discriminant validity.
	Indicators	**Thresholds and Significance**
Reliability	Cronbach's Alpha	>0.7 good internal reliability
Convergent validity	Factor Contributions (loadings) (Malhotra et al. 2007)	IF >0.5 good convergent validity and if < 0.5 there is poor convergent validity.

Table 2. Analysis of internal reliability

Variables	Cronbach's Alpha	Eigenvalues
Entrepreneurial skills	0.9224	6.2105
Emotional intelligence	0.8711	3.3017
The challenges of the ecosystem	0.9412	7.9493

Table 3. Convergent validity of manifest variables

Variables	Average cross-loading of manifest Variables
Entrepreneurial skills	0.8040
Emotional intelligence	0.7515
The challenges of the ecosystem	0.8239

Table 4. Correlation and Discriminant Validity: correlation < AVE

Variables	Correlation	AVE
Entrepreneurial skills	0.5634	0.5634
Emotional intelligence	0.6498	0.6498
The challenges of the ecosystem	0.5670	0.5670

The structural model (also known as the internal model) is evaluated based on the predictive relevance of the latent variables. Multiple R^2 should be analyzed. If the R^2 is greater than 0.1, the model will be significant. The R^2 allows us to understand the contribution of each explanatory variable to the prediction of the dependent variable (Fernandes, 2012). To evaluate the structural model, we examine the path coefficients and the R^2 for each latent variable.

Thanks to the previous measurement models, we can get an idea of the reliability and validity of the results. The evaluation of the structural model allows us to examine the level of the linear relationship and verify the existence of the problem of multi-collinearity between the variables. A collinearity problem arises when the tolerance values are less than 0.20 and the VIF values are greater than 1 (Hair et al. 2013). To detect multiple collinearities, we run linear regressions of each variable against the others. We then calculate:

- The R^2 of each model: If the R^2 is 1, then there is a linear relationship between the model's dependent variable (the Y) and the explanatory variables (the X).
- Tolerance for each model: Tolerance is equal to (1-R^2). It is used in several methods (linear regression, logistic regression, discriminant factor analysis) as a variable filtering criterion. If a variable has a tolerance below a fixed threshold (the tolerance is calculated by taking into account the variables already used in the model), it is not allowed to enter the model because its contribution will be negligible. Hence, it could lead to numerical problems.
- The VIF: The VIF or Variance Inflation Factor is equal to the inverse of the tolerance.

Tables 5, 6, and 7 show the Evaluation of the multi-collinearity of the "entrepreneurial skills" variable, of the multi-collinearity of the "emotional intelligence" variable and of the multi-collinearity of the variable ''the challenges of the ecosystem''.

Table 5. Evaluation of the multi-collinearity of the "entrepreneurial skills" variable

Statistics	Var1	Var2	Var3	Var4	Var5	Var6	Var7	Var8	Var9	Var10
R^2	0.6738	0.5897	0.6682	0.7130	0.4786	0.6451	0.6613	0.6126	0.5765	0.7090
Tolerance	0.3262	0.4103	0.3318	0.2870	0.5214	0.3549	0.3387	0.3874	0.4235	0.2910
VIF	3.0651	2.4371	3.0140	3.4842	1.9180	2.8175	2.9529	2.5814	2.3611	3.4363

Table 6. Evaluation of the multi-collinearity of the "emotional intelligence" variable

Statistics	Var1	Var2	Var3	Var4	Var5
R^2	0.5075	0.5379	0.5408	0.6015	0.6336
Tolerance	0.4925	0.4621	0.4592	0.3985	0.3664
VIF	2.0306	2.1641	2.1777	2.5096	2.7292

Table 7. Evaluation of the Multi-Collinearity of the Variable "the Challenges of the Ecosystem"

Statistics	Var 1	Var 2	Var 3	Var 4	Var 5	Var 6	Var 7	Var 8	Var 9	Var10	Var11	Var12	Var13	Var14
R^2	0.7060	0.7683	0.7107	0.7861	0.7506	0.7278	0.6913	0.7193	0.7088	0.7010	0.7360	0.5148	0.7418	0.6719
Tolerance	0.2940	0.2317	0.2893	0.2139	0.2494	0.2722	0.3087	0.2807	0.2912	0.2990	0.2640	0.4852	0.2582	0.3281
VIF	3.4009	4.3158	3.4566	4.6747	4.0090	3.6741	3.2398	3.5631	3.4335	3.3441	3.7885	2.0610	3.8732	3.0483

The results show that for all the variables that make up our structural model, the tolerance values exceed 0.2, and also the VIF values are greater than 1. Based on these results, we can conclude that there is no multi-collinearity problem (Table 8).

RESULTS

The Coefficient of Determination R^2

Table 9 presents the Coefficient of Determination R^2.

Interpretation of GOF Values

The GOF (Goodness. Of Fit) indicator informs about the model's goodness of fit. The GOF value is determined as follows: $GOF=\sqrt{R^2*AVE}$ (see Table 10).

Effect Size and Strength of Relationship between Variables

Determining the effect size by using Cohen's f^2 indicator allows us to discuss the strength of the relationship between the variables (Table 11). The assessment of the structural model leads to the following conclusions: The contribution of the explanatory variables to the prediction of the dependent variable is significant. This means that the internal model has a predictive relevance for the latent variables (the R^2 is greater than 0.1, the model is significant); The model is a good fit since the GOF indicator reflects the predictive power of the overall model; The structural model informs about the strength of the relationship between the variables, seeing that the value of f^2 remains significant.

Overall Assessment of the Model

The overall assessment of the model is based on the Redundancy, Communality, and Goff indices (Table 12). The overall assessment of the model is based on the Redundancy, Communality, and Goff indices. The commonality and redundancy indices are all positive. They reflect the overall good quality of internal and external models. This positive assessment is also demonstrated by the Goodness of fit (Gof) indices associated with the two models, which are very close to 1.

Analysis of Mediation Effects

Mediation analysis is used to test hypotheses that shed light on the various intermediary mechanisms by which causal effects arise. The mediation model assumes that the independent variable (X) influences a mediator (M), which in turn influences the dependent variable (Y). The analysis of the variance table is relied on to assess the explanatory power of the explanatory variables.

Table 8. Evaluation of the structural model

Indicators	Objectives	SMART PLS Procedure	Thresholds and significance
Coefficient of determination R^2	to judge the quality of a structural model	Blindfolding	The closer is this coefficient to 1, the better the model.
GoF (Goodness of-fit): Predictive evaluation of the model	Power of model prediction global	Bootstrapping	(Wetzel et al, 2009) Gof small=0.10 Average Gof=0.25 GofLarge=0,36
The Cohen: Predictive model evaluation f^2: Predictive model evaluation.	Indicate the strength of the relationship between variables	Bootstrapping	(Cohen, 1988) f^2 =0.35 Relationship important f^2 =0.15 Relationship average f^2 =0.02 Relationship Low
Value of P / Value of T: Hypothesis testing	Testing the significance of existing links between endogenous and Exogenous latent variables	Bootstrapping	If t> 1.96 and P<0.05 There is a significant relationship between the variables

Table 9. The coefficient of determination R^2

Variables	R^2 value
Entrepreneurial Skills	0.9832
Emotional Intelligence	0.0336
The Challenges of the Eco-System	0.9824

Table 10. Interpretation of GOF Values

R^2	AVE	GOF=$\sqrt{R^2 * AVE}$	Interpretation
0.9832	0.5634	0.5586	Gof large
0.0336	0.6498	0.1191	Weak gof
0.9824	0.5670	0.5619	Gof large

Table 11. Effect size and strength of relationship between variables

Variables	Cohen's indicator "f^2	Interpretation
Entrepreneurial Skills	1,0573	Important Relationship
Emotional Intelligence	0.082	Weak Relationship
The Challenges of the Ecosystem	5.8410	Important Relationship

Table 12. The overall assessment of the model

	Average local Authority (AVE)	Average Redundancies
The Challenges of the Ecosystem	0.5795	0.2894
	External Model	**Internal Model**
Gof	0.9882	0.7322

The estimation of the conditional direct effect of independent variable X on dependent variable Y for three values of the moderator is determined using the table of the conditional direct effect of X on dependent variable Y. This table displays the estimation using several tests, such as the corresponding standard deviation, Student's t, the corresponding probability, and the confidence interval.

The estimation of the conditional indirect effect of independent variable X on dependent variable Y for three values of the moderator is determined through the table of the conditional indirect effect of independent variable X on dependent variable Y. The bootstrap method allows us to examine this effect. If the confidence interval includes 0, the conditional indirect effect of independent variable X on dependent variable Y in the model will not be significant.

Direct Effect

This effect examines the estimation of the independent variable on the dependent variable (X on Y). In our empirical study, the direct effect is determined as follows (Table 13).

Path 1: entrepreneurial skills → the challenges of the eco-system.

To estimate the direct effect of independent variable 'X on dependent variable Y', a set of indicators is used (the effect size, the standard error, Student's t and also the confidence interval, etc.). In our empirical study, the direct mediating effect formed between entrepreneurial skills and ecosystem challenges was found to be significant. This means that there is a causal relationship between these two variables.

Indirect Effect

After examining the direct effect of mediation, we will also test the indirect effect. Table 14 expresses this effect through the contribution of the independent variables on the dependent variable as a function of two mediating variables.

Path 2: entrepreneurial skills → emotional intelligence → the challenges of the eco-system

The indirect mediating effect is expressed through the contribution of the independent variables on the dependent variable as a function of the mediating variables. In our empirical study, we will test the effect of entrepreneurial skills on the eco-system challenge through a variable that plays a mediating role, namely emotional intelligence. The indirect effect of mediation between entrepreneurial skills and ecosystem challenges was not considered significant. Thus, there is no causal relationship between these variables.

Model Equation

Ecosystem challenges = 0.9933*Entrepreneurial skills +0.0123*Emotional intelligence

Hypothesis testing: (estimation of the structural model)

Hypotheses are tested by estimating a structural model that reproduces the assumed relationships between the latent constructs. Hypotheses validation depends on the importance and significance of the structural relationships obtained. Falk & Miller (1992) suggest that a "good model" obtained by PLS regression should have coefficients of determination greater than 0.1.

For structural coefficients, Chinn (1998) considers that "standardized structural coefficients should be at least equal to 0.20 and, ideally, greater than 0.3 to be considered significant. In our empirical study, the significance of the coefficients was estimated using a bootstrap13 procedure. According to this method, hypotheses are validated by determining the value of Student's T and also by checking the path coefficients: If t> 1.96 and Pr <0.05, there is a significant relationship between the variables.

The mediator effect test (H1)

The test for mediator effects in our empirical study is adapted by using the bootstrapping method of Preacher and Hayes. The usual representation of a mediator effect involves three variables: the independent variable X, the independent variable Y, and the mediator variable M. The bootstrapping method (Preachers and Hayes 2004-2008) is a powerful tool for effectively analyzing mediation (Table 15).

Table 13. The direct mediating effect

Variables	Effect value	Standard error	T	PR>t	Confidence interval	
					Min	Max
entrepreneurial skills → the challenges of the eco-system	0.9915	0.0172	5.77	0.000	0.9578	1.0252

Table 14. The indirect effect of mediation

Variables	Effect value	Standard error	T	PR>t	Confidence interval	
					Min	Max
Entrepreneurial skills	0.9933	0.0180	5.505	0.000	0.958	0.999
Emotional intelligence	0.0123	0.0046	2.6794	0.010	0.0033	0.0213

Table 15. Hypotheses validation

Variables	T (threshold t>1.96)	Pr (threshold Pr<0.05)	Validation of hypotheses
Entrepreneurial skills → the challenges of the eco-system	5.77	0.000	Validated Hypothesis
Entrepreneurial skills → emotional intelligence → challenges of the eco-system	0.6794	0.0.010	Validated Hypothesis

This study aims to test how entrepreneurial skills can help women entrepreneurs overcome ecosystem barriers, and what role emotional intelligence can play in overcoming ecosystem barriers and strengthening skills. The results show that entrepreneurial skills among women have a significant effect on ecosystem challenges. The results show that women's entrepreneurial skills have a significant effect on the challenges of the ecosystem. Entrepreneurial skills play an essential role in resolving the challenges encountered in the entrepreneurial ecosystem. Entrepreneurial skills refer to the practical skills, knowledge as well as abilities needed to succeed as an entrepreneur. These include planning, financial management, human resources management, creativity, decision-making, problem-solving, negotiation, etc.

When entrepreneurs possess a solid set of skills, they are better equipped to deal with a complex and dynamic environment. First of all, entrepreneurial skills foster creativity and innovation. Entrepreneurs with these skills can find innovative solutions to existing problems and seize new opportunities. In addition, management and leadership skills help entrepreneurs mobilize and motivate their teams. They promote productivity and business growth. Financial management skills also enable entrepreneurs to manage their resources effectively and to make informed decisions about financing. Finally, communication and networking skills are essential for building strong relationships with potential partners, customers, and investors. This corroborates the findings reported by Lyons et al. (2020), Guerrero et al. (2020), and Hsieh and Kelley (2020); as they claimed that a dynamic entrepreneurial ecosystem can be enhanced by the entrepreneurial skills of individuals. With Kapalan and Warren's (2010) statement, we can conclude that entrepreneurs possess capabilities that are embedded in themselves and that they can discover these hidden traits and develop them sufficiently to become successful entrepreneurs. Women entrepreneurs at all levels need entrepreneurial skills to improve their ability to cope with current life changes and future uncertainties (Sajadi Qeidari et al. 2017; Yaghoubi Farani et al. 2019).

On the one hand, Ismail et al. (2019) and Woodcock et al. (2019) suggest that entrepreneurs' success is highly dependent on their business skills and entrepreneurial education. On the other hand, emotional intelligence moderates the relationship between entrepreneurial ecosystem challenges and entrepreneurial skills. The results show a significant effect of this relationship, or the contribution of emotional intelligence is positive, but with a very weak effect on the relationship. Mixed models (Goleman, 2006) are an important reference for studying the concept of emotional intelligence. Goleman's 2006 model of emotional intelligence is a set of five factors: self-awareness, emotional self-regulation ability, motivation, empathy, and social competence. Emotional intelligence can play a crucial role in modulating and improving the relationships between entrepreneurial competencies. Thereby, it helps to overcome the challenges of the ecosystem.

By understanding and effectively managing their own emotions, women entrepreneurs can maintain a positive and resilient state of mind. This situation enables them to face obstacles and setbacks with determination. In addition, emotional intelligence enables them to develop deep empathy with other players in the ecosystem, such as customers, partners, and employees, by understanding their emotions and needs. This fosters more effective communication, strengthens bonds, and encourages collaboration.

By cultivating strong relationships and demonstrating emotional understanding, entrepreneurs can generate the trust and support needed to overcome the challenges of the entrepreneurial ecosystem, build strong teams, attract investors, and establish successful partnerships. This result is in line with the findings of Mousivand et al. (2017), Aliabadi et al. (2016), Izadi et al. 2020), and Ataei et al. (2020). Studies such as those by Tanvir et al. (2016) and Mariza (2016) showed that emotional intelligence influences the decision-making process as it represents a significant determinant in decision-making. Individuals who are aware of their emotional states can improve their decision-making ability.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Innovative and entrepreneurial companies are created and developed to be an ecosystem's part. The presence of a genuine entrepreneurial ecosystem in universities goes a long way towards ensuring the sustainability of knowledge-intensive businesses. This study's goal is to investigate the effect of the entrepreneurship ecosystem on women's entrepreneurial skills with the mediation of emotional intelligence. For women, to launch innovative businesses, stakeholders need to interact in a free and open economy, a stable and effective policy environment, a high-quality monitoring environment, a simple and flexible business environment and a knowledge-intensive cultural climate.

This paper explored women's perceptions of the entrepreneurship ecosystem and their self-reported entrepreneurial skills. The outcomes of this research show that entrepreneurial skills play a crucial role in women's ability to overcome the challenges of the entrepreneurial ecosystem. Emotional intelligence has a positive effect, but its contribution to our research model is small. Women entrepreneurs who possess and develop these skills have demonstrated greater resilience, adaptability, and the ability to make informed decisions in the face of obstacles. These skills include risk management, creative thinking, problem-solving, effective communication, and the ability to build strong networks. Women entrepreneurs, who cultivate these skills, are better equipped to work in a complex and competitive environment where resources and opportunities may be limited. In addition, these skills play an essential role in building self-confidence and

self-esteem. This is particularly important given the additional challenges that women can face as a result of gender stereotyping and prejudice.

Entrepreneurial skills play a crucial role in women's success in the complex entrepreneurial ecosystem. It is necessary to take concrete steps (university training, incubators, regulations, professional and non-professional support, coaching, etc.) to strengthen these skills and to remove the barriers they face. This will help to create a more inclusive and diverse entrepreneurial environment through more effective and efficient government policies.

Recommendation

The different players in the ecosystem, the role that legislators, policymakers, and relevant officials should play crucial roles in providing an optimal ecosystem. Thus, to fill the gaps, which are mainly related to the legislative institutions and executive sectors' performance, legislators and policymakers should take into consideration entrepreneurship's different aspects and the creation of an optimal business environment. Thus, appropriate conditions are provided for women who intend to start a business with the participation of experienced people, as the latter possess adequate knowledge as well as in-depth communications to develop a business. This can increase women's chances of success and business progress. On the other hand, efforts should be made to facilitate the issuing of licenses for the creation of new businesses by competent institutions to encourage women and to develop innovative businesses. In addition, good funding will motivate women to start their own businesses. Moreover, as emotional intelligence needs to be acquired, the material can be included in training programmes. Also, employment policymakers should see the strategic value of emotional intelligence. Then, they can encourage students to acquire entrepreneurial skills and to create a competitive edge in the market and in companies as well. It is therefore vital to invest in developing women's entrepreneurial skills not only by offering specific training and mentoring programmes but also by creating an inclusive environment that promotes equal opportunities. By strengthening women's entrepreneurial skills, we can reinforce their success and their positive contribution to the entrepreneurial ecosystem as a whole. From a future research point of view, we are trying to study how university entrepreneurial ecosystems (incubators

and entrepreneurship training programmes) impact on the entrepreneurial spirit of young graduates.

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